ULTRASOUND GUIDED CAUDAL EPIDURAL STEROID FOR CHRONIC LOWBACK PAIN AND SCIATICA

Dissertation submitted to

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In partial fulfillment for the award of the degree of

ANAESTHESIOLOGY
BRANCH X

INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE
MADRAS MEDICAL COLLEGE
CHENNAI- 600003

APRIL 2017

CERTIFICATE OF THE GUIDE

This is to certify that the dissertation titled **"ULTRASOUND GUIDED CAUDAL EPIDURAL FOR LOWBACKPAIN AND SCIATICA (A PROSPECTIVE, RANDOMIZED, DOUBLE BLINDED, CONTROLLED STUDY)"** is a bonafide research work done by Dr.G.GOWTHAM in partial fullfilment of the requirement for the degree of DOCTOR OF MEDICINE in Anaesthesiology.

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This is to certify that the dissertation titled, "ULTRASOUND GUIDED CAUDAL EPIDURAL STEROID FOR CHRONIC LOW BACK PAIN AND SCIATICA **(A PROSPECTIVE, RANDOMIZED, DOUBLE BLINDED CONTROLLED STUDY)** Submitted by **DR.G.GOWTHAM** in partial fulfilment for the award of the degree of DOCTOR OF MEDICINE in anaesthesiology by The Tamilnadu Dr.M.G.R medical university,Chennai is a bonafide record of work done by her in the INSTITUTE OF ANAESTHESIOLOGY& CRITICAL CARE, Madras Medical College,during the academic year 2014 -2017 .

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DECLARATION

I hereby declare that the dissertation titled, **"ULTRASOUND GUIDED CAUDAL EPIDURAL STEROID FOR CHRONIC LOWBACKPAIN AND SCIATICA (A PROSPECTIVE, RANDOMIZED, SINGLE BLINDED, PLACEBO CONTROLLED STUDY)** Has been prepared by me under the guidance of PROF.DR.M.BHAVANI, M.D Professor of Anaesthesiology, INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE, MADRAS MEDICAL COLLEGE, CHENNAI, in partial fulfillment of the regulations for the award of the degree of M.D (Anaesthesiology), examination to be held in April 2017.

This study was conducted at Department of Anaesthesiology, **INSTITUTE OF ANAESTHESIOLOGY, MADRAS MEDICAL COLLEGE, CHENNAI.**

I have not submitted this dissertation previously to any journal or any university for the award of any degree or diploma.

Dr.G.GOWTHAM

Date :
Place : Chennai

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INDEX

INTRODUCTION

Low backpain and sciatica continue to be leading the cause of disability. Most common cause and complaint in young adults was herniated disc. Incidence is high in our country due to difficult working and living environment. Most commonly used initial treatment is simple effective epidural steroid injection. The conventional wisdom that in most cases the pain will resolve on its own within few weeks is true, but recent evidence indicates that relief from self healing is followed by a significant incidence of recurrence usually in less than a year.

Lumbar disc herniation seems to be one of the most frequent causes of Lowback pain .Neverthless it is well known that many patients complaining low back pain as well as radiating leg pain suggesting sciatica did not show lumbar disc herniation in MRI and CT. There is emerging evidence suggesting that this paradox must be probably attributed to the fact that mechanical nerve root compression is not sufficient by itself to cause nerve root pain but also due to local chemical contribution from injured tissue. Treating patients suffering from lowbackpain can also be challenging and hence many treatment methods have been introduced as supported by literature

Although actual mechanism of action is not fully known, there is evidence that corticosteroids achieve pain relief by inhibition of proinflammatory mediators eg, neural peptides phospholipase A, Acid

hydrolases, histamine and kinin and by causing reversible local anaesthetic effect (decreased sensitivity of nerveroots to irrtants). Interupts inflammatory cascades and inhibits neural transmission by fibres(nociceptive).

Epidural steroid injection is a nonsurgical treatment for managing lowback and radicular pain caused by herniated lumbar disc

The low back pain of mechanical origin accompanied by signs and symptoms of nerve root irritation respond to epidural steroid injection with gratifying results. It relieves pain, improve function and reduce the need for surgical intervention. Therefore the long acting epidural steroid injection has been widely used and slowly established as a reliable mode of minimally invasive treatment in chronic pain management centre .It provides analgesia for variable periods

In my study, assessing the efficacy of caudal epidural steroid injections under USG guidance for chronic low back pain and sciatia, support the evidence of pain relief and improvement of pain scores. The selection of caudal epidural method because there is less dural puncturing and arterial injury

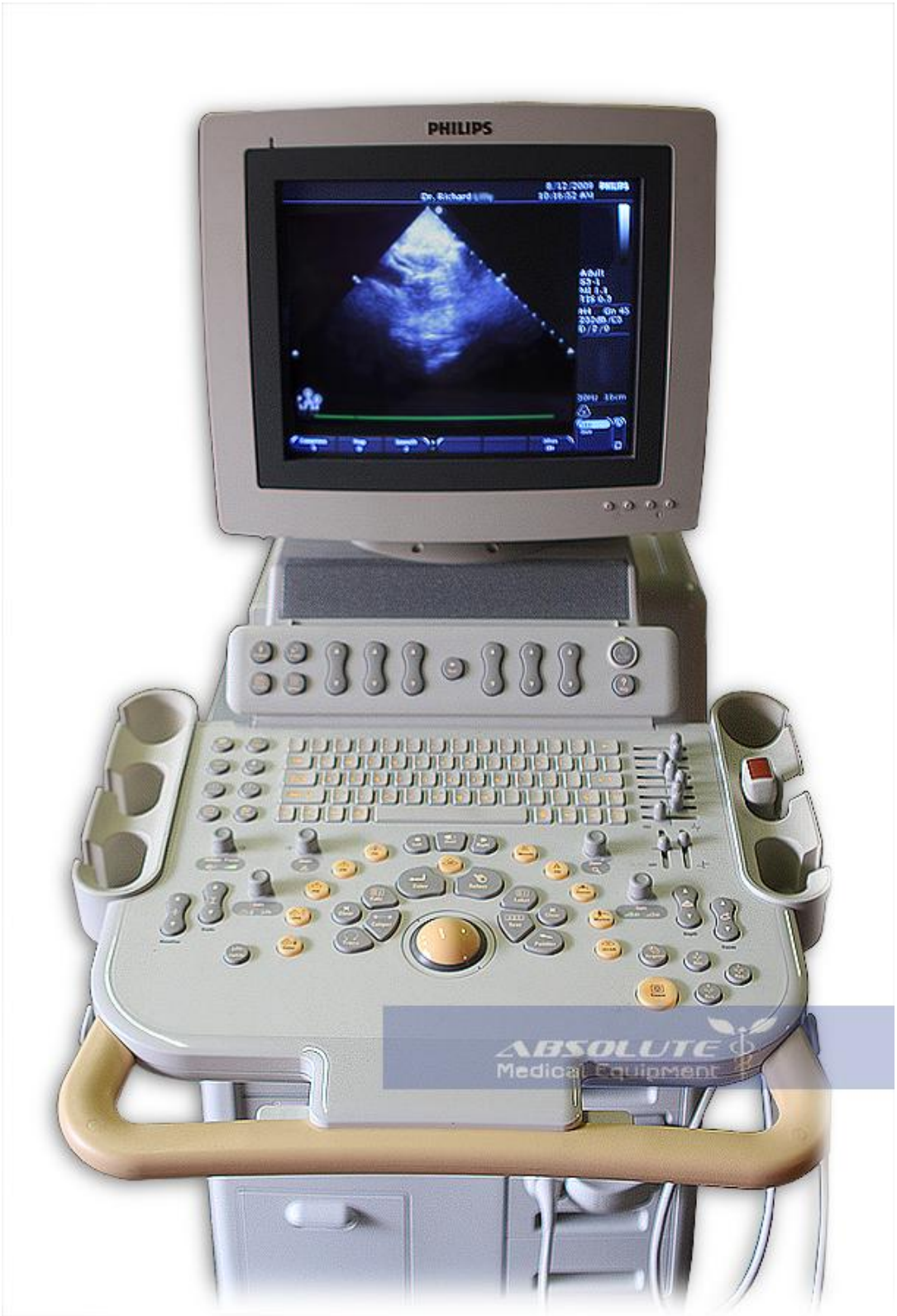
AIM OF THE STUDY

To study the efficacy of "USG guided caudal epidural steroid in management of chronic low back pain and sciatica"

Secondary Objectives

- To evaluate the duration of analgesic efficacy with steroids.
- To assess haemodynamics during and after procedure.
- Post procedure visual analogue scale pain score.
- Complication rate.

ULTRASOUND



USG PRINCIPLES[24,26]

Based on principles of piezoelectric effect. That is defined as principle of converting electrical energy into mechanical energy. The reverse of the piezoelectric effect converts energy back into its original form.

This phenomenon was discovered by the curies in 1880 using natural quartz.

Frequency ranges used in medical ultrasound imaging range from 2-15 MHZ.

PIEZOELECTRIC EFFECT AND ULTRASOUND TRANSDUCERS

Transducers converts one type of energy into another, depending upon pulse echo principle transducers covert,

Electricity into sound- pulse

Sound into electricity- Echo

PULSE

- It is the wave sent to soft tissue
- Interaction of this sound wave with soft tissues said to be bioeffect.
- It is determined by transducers of probe crystal and is not operator controlled.

ECHO

- It is wave produced by soft tissue
- It is received back by transducer, crystals, interpreted and processed by USG machine

FREQUENCY

No. of complete cycles per unit of time.

One cycle per second= one Hertz (HZ)

TRANSDUCER FREQUENCIES

This adult patient 5-10 MHz small footprint hockeystick

Average sized adults- Linear transducer

Obese patient curvilinear used

HIGH FREQUENCY WAVES

- Improved resolution with less depth of penetration
- Used for superficial uses

LOW FREQUENCY WAVES

- Poor resolution with full depth of penetration
- For general abdomino pelvic uses.
- Transducer frequency in USG machine is predetermined by design

- Basic sound relationships

WAVELENGTH

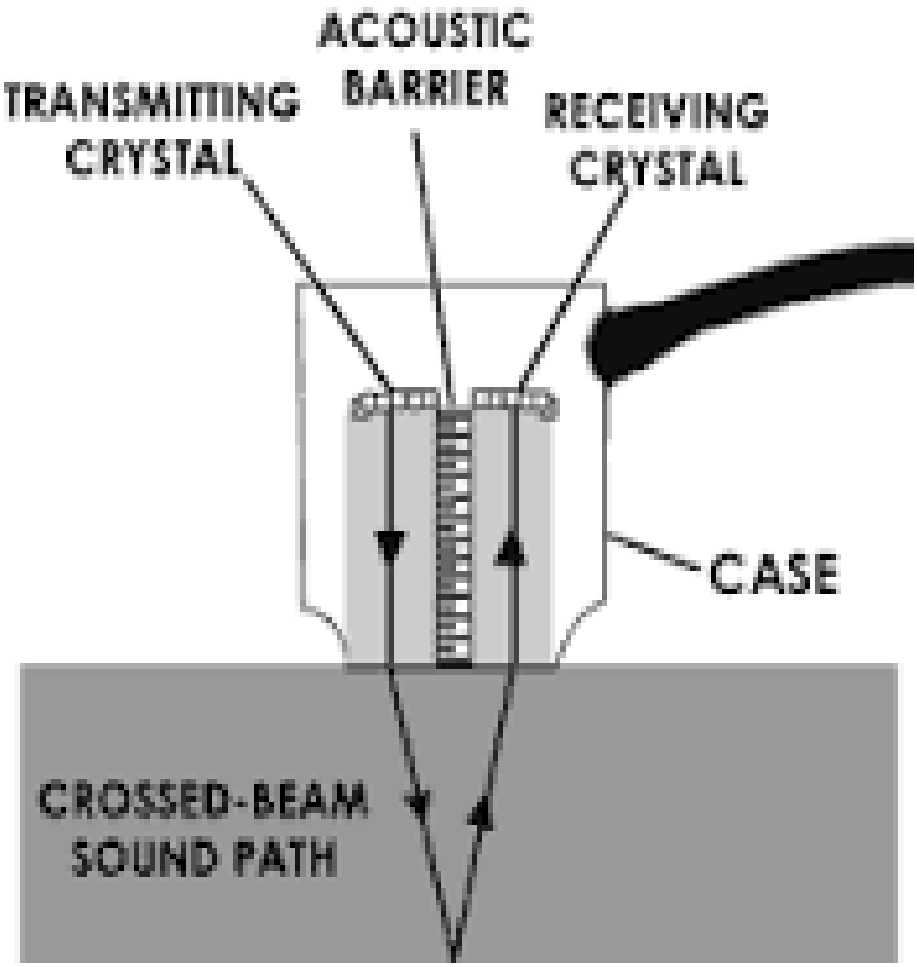
- Distance between consecutive cycles of sound

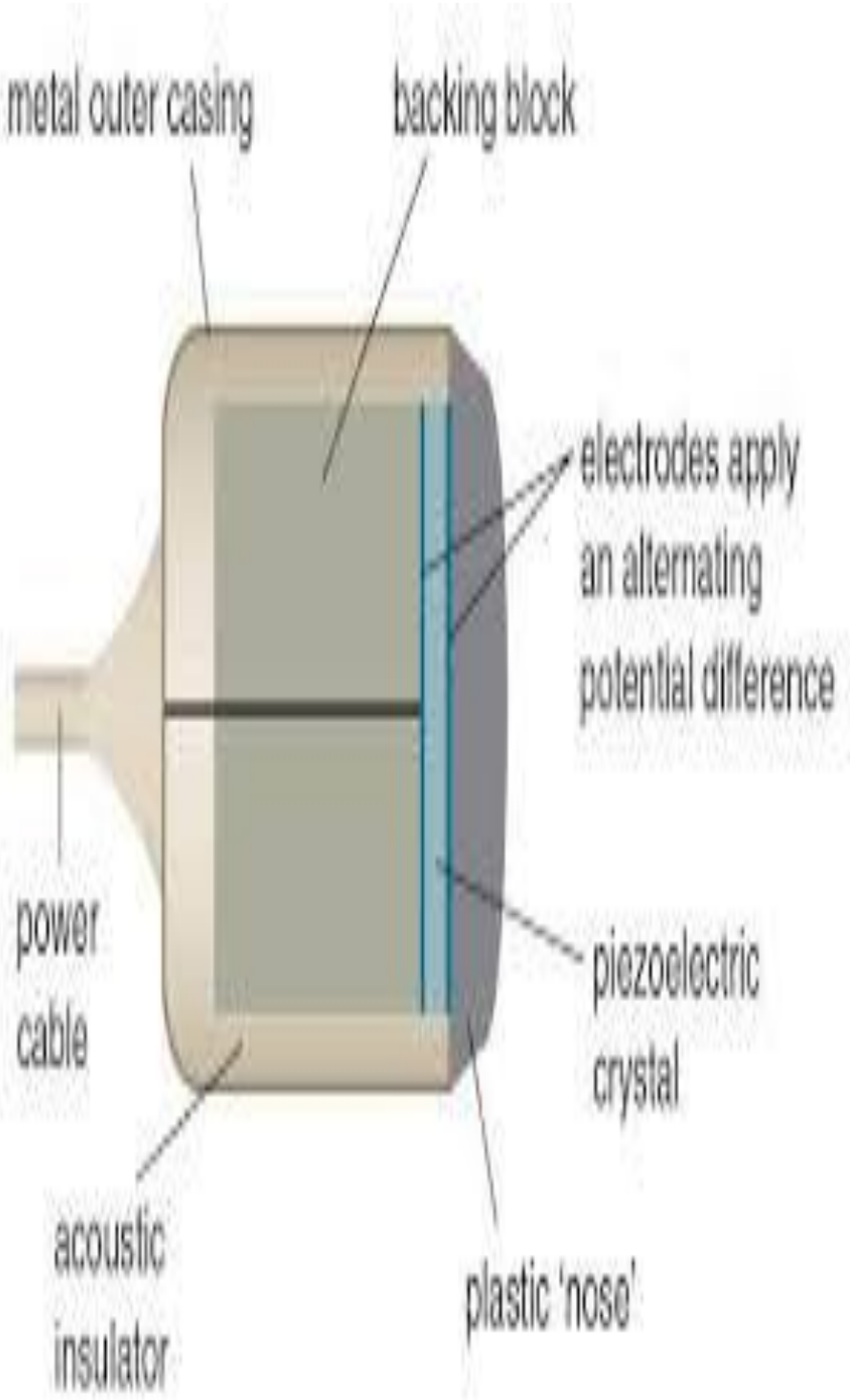
BANDWIDTH

- A range of frequencies is band width
- Broadbandwidth transducers contain more than one operating freqnency.

AXIAL AND LATERAL RESOLUTION

Spatial resolution is the term which describes that two physically close objects can be displayed separately. Axial: along the beampath. Lateral: perpendicular to beampath. Normally used spatial resolution is 1mm or less.


ACOUSTIC
BARRIER
TRANSMITTING
CRYSTAL
RECEIVING
CRYSTAL
CASE
CROSSED-BEAM
SOUND PATH


metal outer casing
backing block
electrodes apply an alternating potential difference
power cable
piezoelectric crystal
acoustic insulator
plastic 'nose'

MECHANIC COMPONENTS

Transducers

Types Mechanical	Electronic
Oscillating Rotation	Linear assays Curved assays Phased assays

Receiver

Memory

Display

PROBE TYPES

Curvilinear (low frequency probe)

Linear (High frequency Probe)

DISPLAY MODE

B Mode- 2 dimensional

M Mode- Records moving echoes from heart in display, thus could be interpreted in terms of myocardial and valvular function.

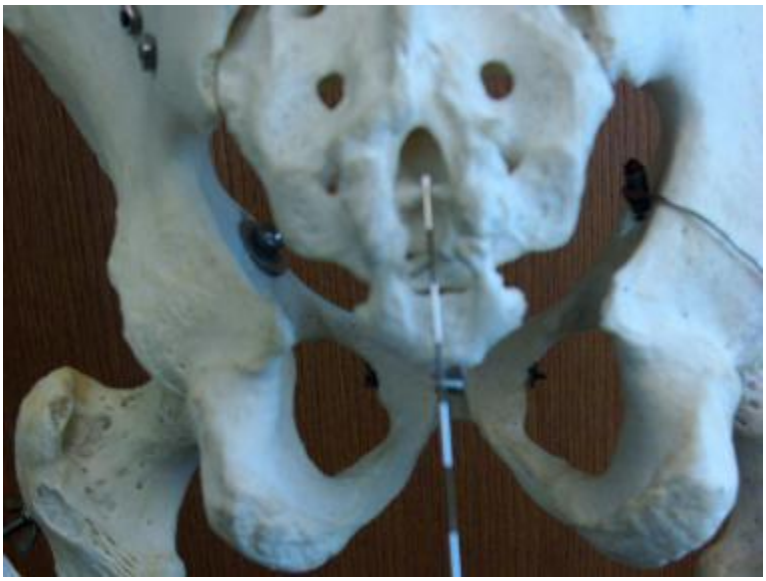
DOPPLER

Here the frequency shift in echo is measured after a certain time.

COLOUR DOPPLER

Uses colour corresponding to frequency shift, red for near to and blue for away from the probe.

CAUDAL ANATOMY[19,24,35]



Sacrum consists of

- 5 embryonic fused vertebrae
- Convex dorsally

Coccyx consist of

- 3-5 rudimentary vertebral bones
- Triangular
- Base attached to sacrum

Superior articular base attaches to the apex of the V shaped sacrum at the sacrococcygeal joint bounded by sarococcygeal ligament, extends dorsally in midline to cover sacral hiatus.

Sacral hiatus bounded by sacral cornu laterally.

This space is natural defect in union of dorsal midline of S5 where it meets with S4 vertebrae (partial defect).

Floor is vertebral body of S5.

Sacrum has 2 sets of foramen

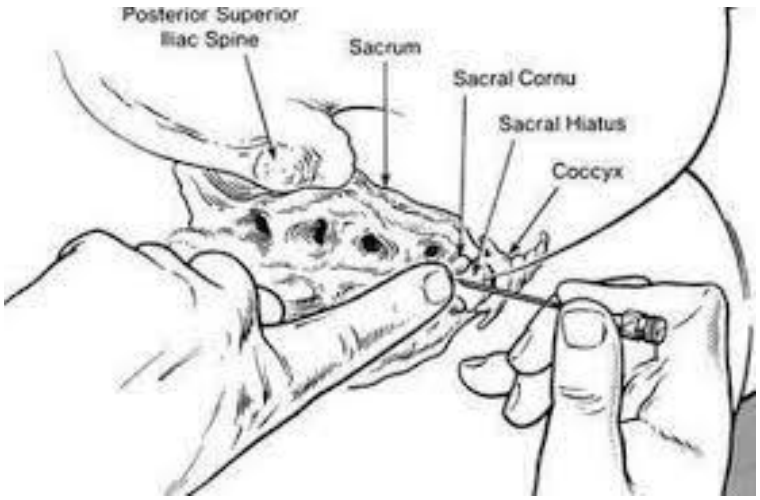
4 Posterior sacral foramina

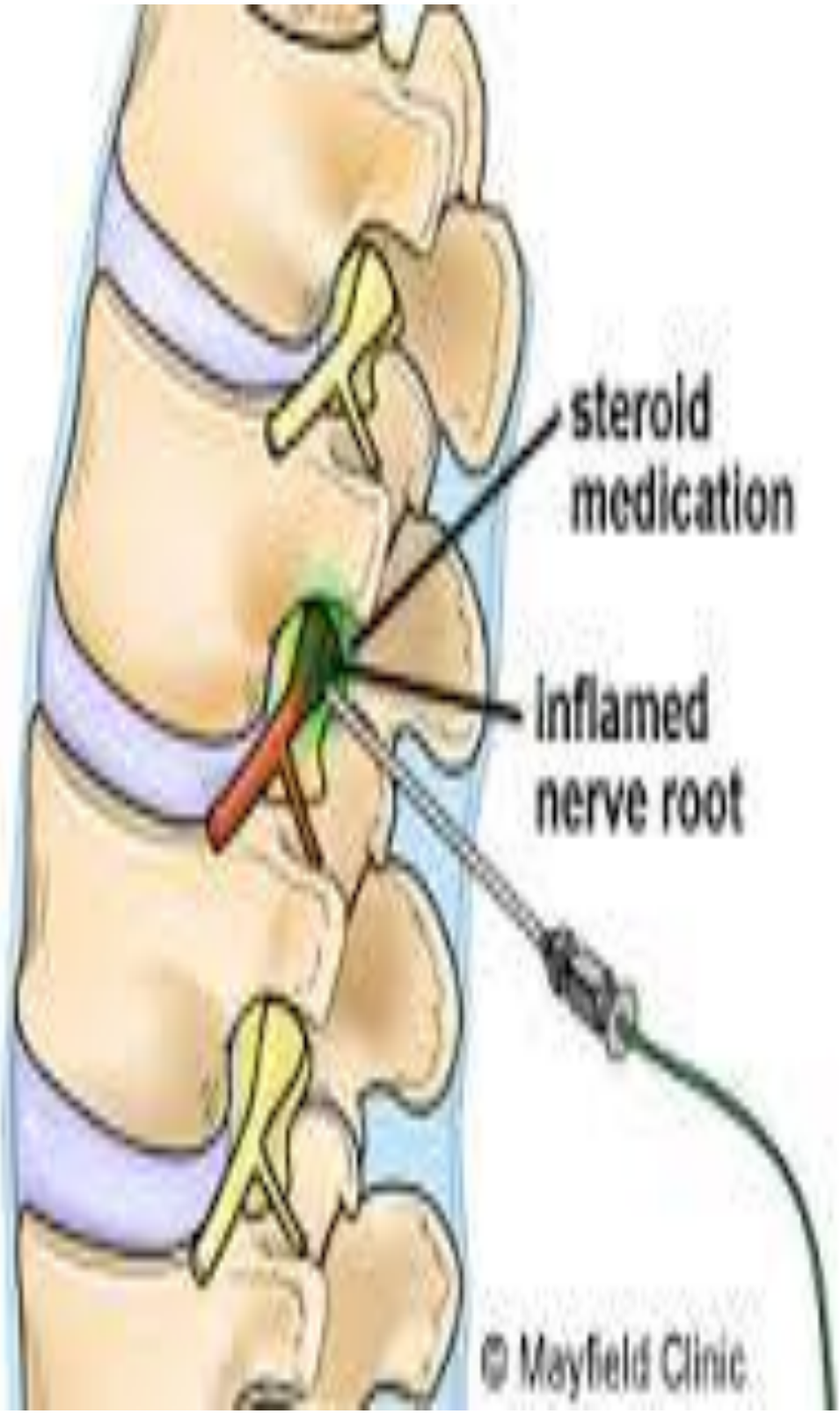
4 Anterior sacral foramina

Lateral attachment of sacrum is sacroiliac joint superiorly attached to superior articular facet of L5 S1 fact joints bilaterally as well as L5-S1 disc.

Sacral canal contains epidural venous plexus down to the level of S4 also contains fat.

The termination of thecal sac ends at S1 in adults S3 in children. This is of significance when judging optimum placement.




sterold
medication
inflamed
nerve root
© Mayfield Clinic

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CAUDAL EPIDURAL ULTRASOUND ANATOMY[8,16]

1) Sacrococcygeal ligament can be visible as one or two layers in transverse view.

2) Less echobright than underlying bone of sacral canal

3) Hence transducer fitted to enhance echoes from sacroccygeal ligament because it exhibits high degree of anisostropy hence along its entire length difficult to visualize.

In longitudinal view caudal epidural sac is hypoechoeic and tapers underneath sacrococcygeal ligament.

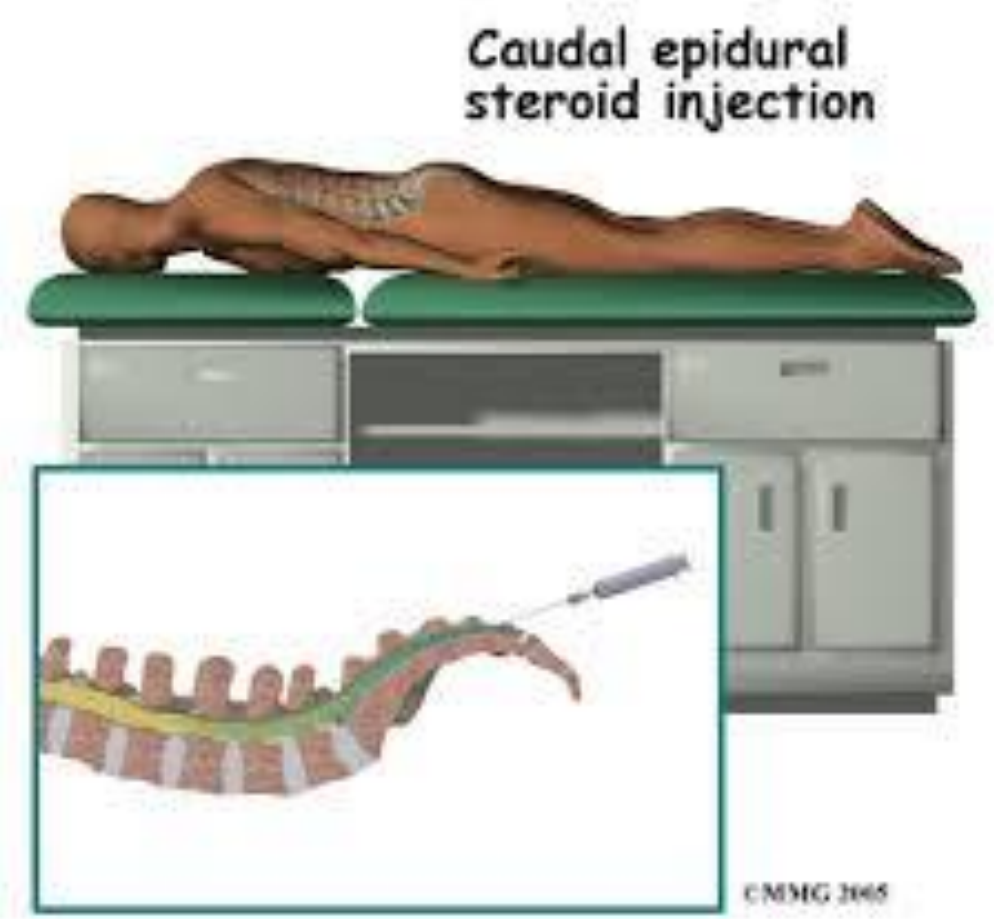
Techniques of caudal epidural under USG guidance

POSITION

Prone (in adults)

Lateral descubitus (in children)

knee chest (infrequently used)



PROCEDURE

1) Patient in prone position

2) Under aseptic precautions, sacral cornu is palpated local infiltration done with 2% ml preservative free xylocaine.

3) Sacral hiatus easiest to image in transverse view over midline.

4) Sacral cornua appears as two reverse and u shaped hyperechoic structure.

5) Sacraococcygeal ligament and base of sacrum appear as two parallel band like structures between cornua

6) Sacral hiatus lies between two hyperechoic bands.

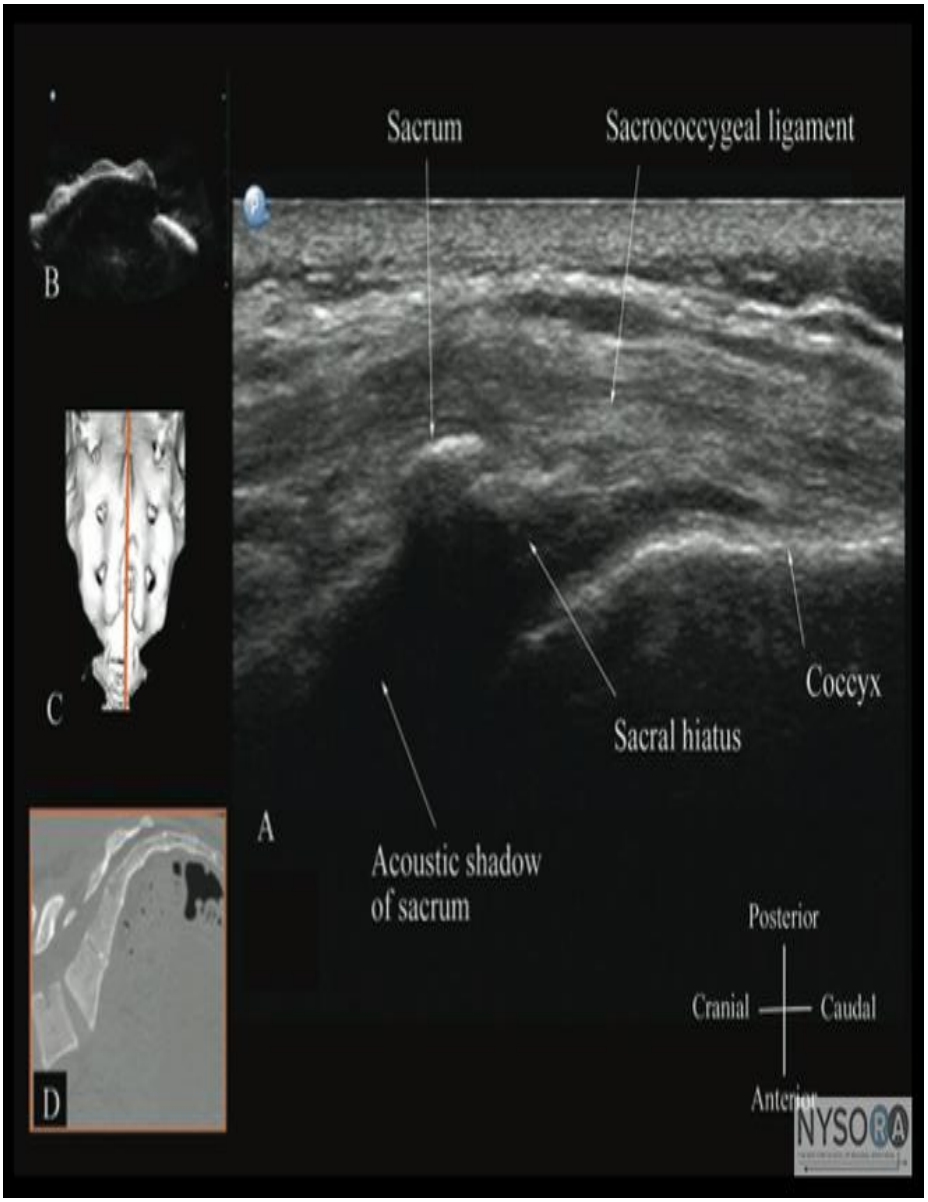
7) 18 gauge 9cm epidural needle can be used in plane through sacral hiatus. 2 Approaches. Longitudinal inplane and tranverse out of plane approach.

8) Sacrococcygeal ligament is thick (=3mm) in adults, needle when punctured in adults the ligament characteristic tent and recoil present and also needle tip disappears due to acoustic shadowing from overlying bone when enters epidural space

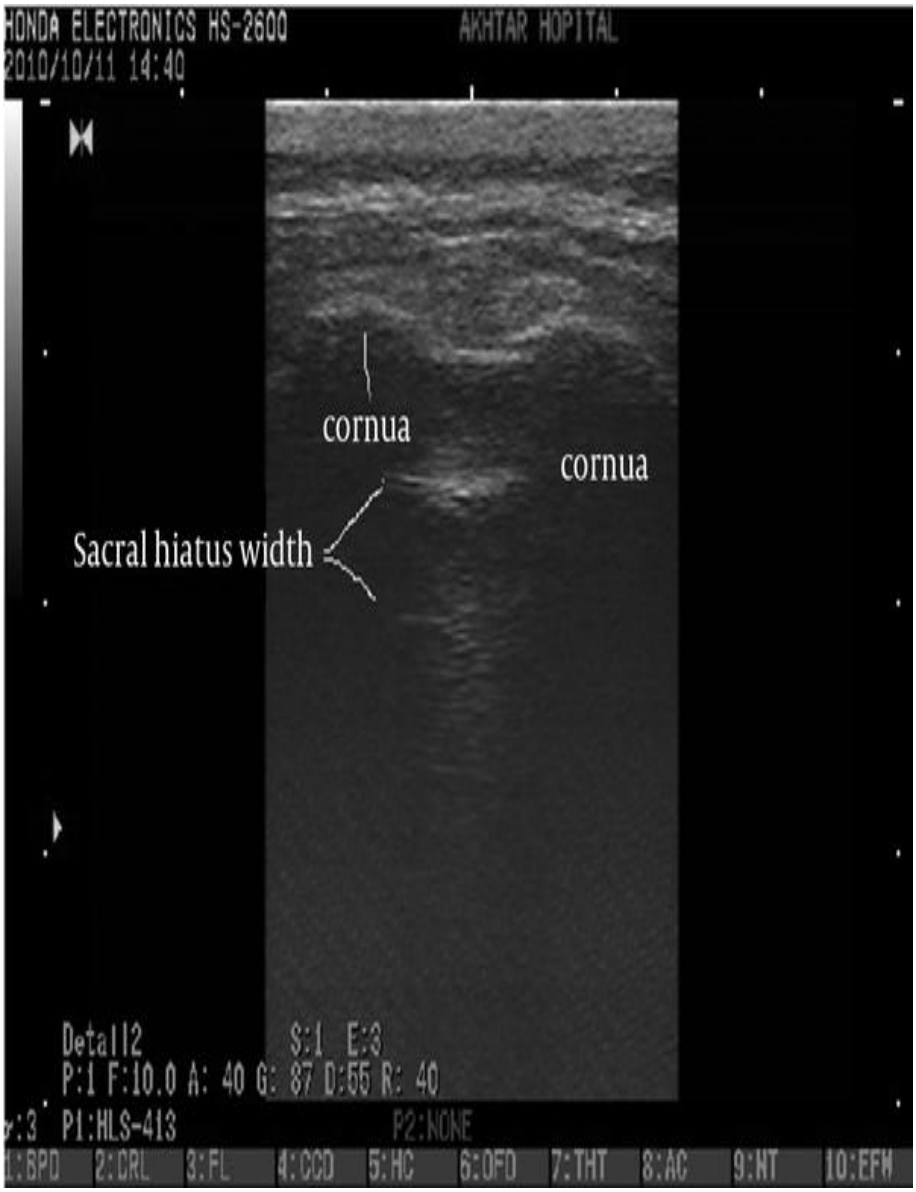
9) Epidural catheter insertion done, drugs 0.125% Bupivacaine total 8cc of which 4cc given initially then Triamcinolone 40mg/ml (2ml) was given and then by withdrawing catheter remaining 4cc bupivacaine given to avoid sinustrack formation . Vitals monitored.

10) After the procedure VAS score, SLRT & vitals monitored in PACU for 24 hours.

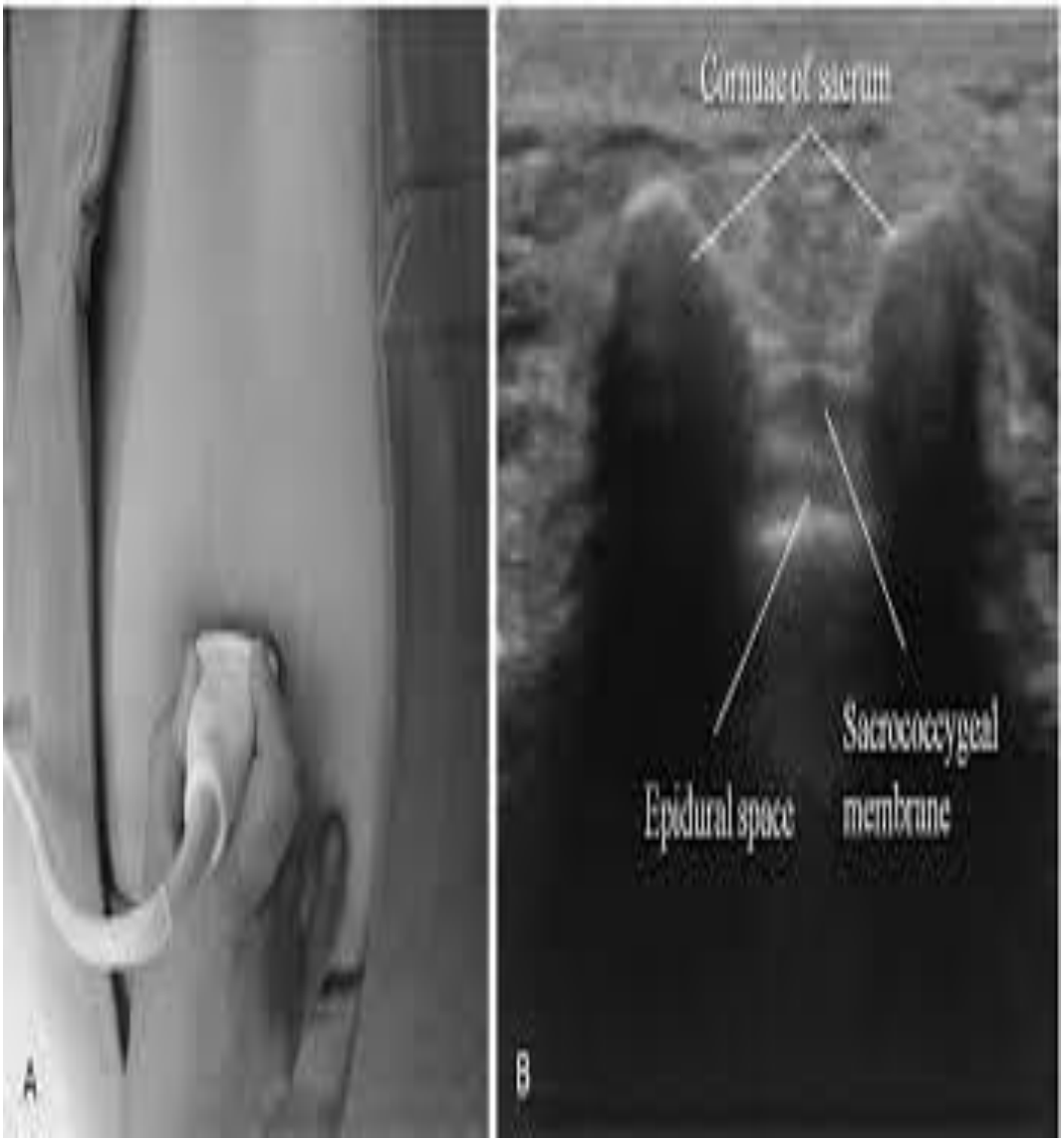
IN LONGITUDINAL VIEW,IN ULTRASOUND



IN TRANSVERSE VIEW IN ULTRASOUND (A)



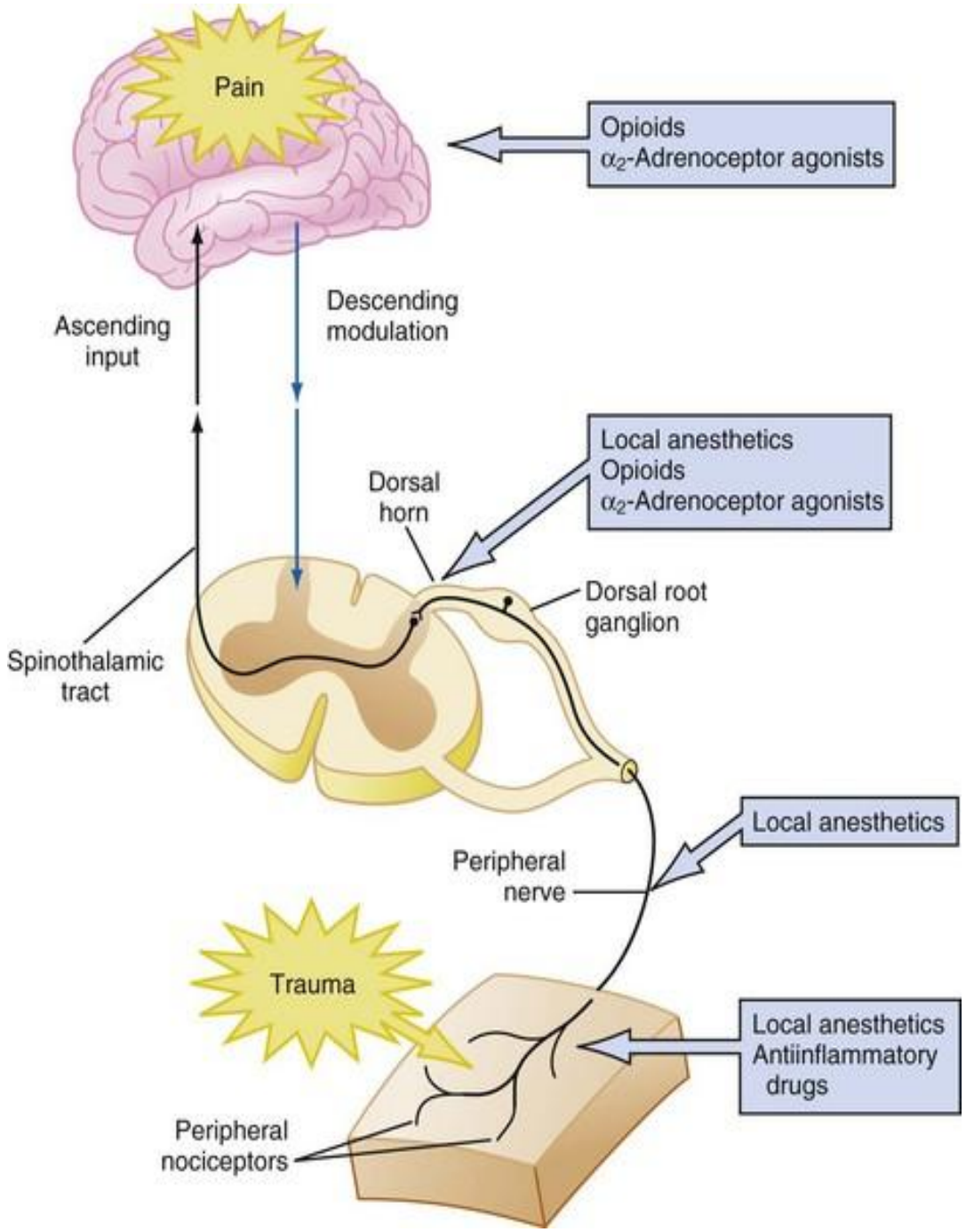
IN TRANSVERSE VIEW IN ULTRASOUND (B)

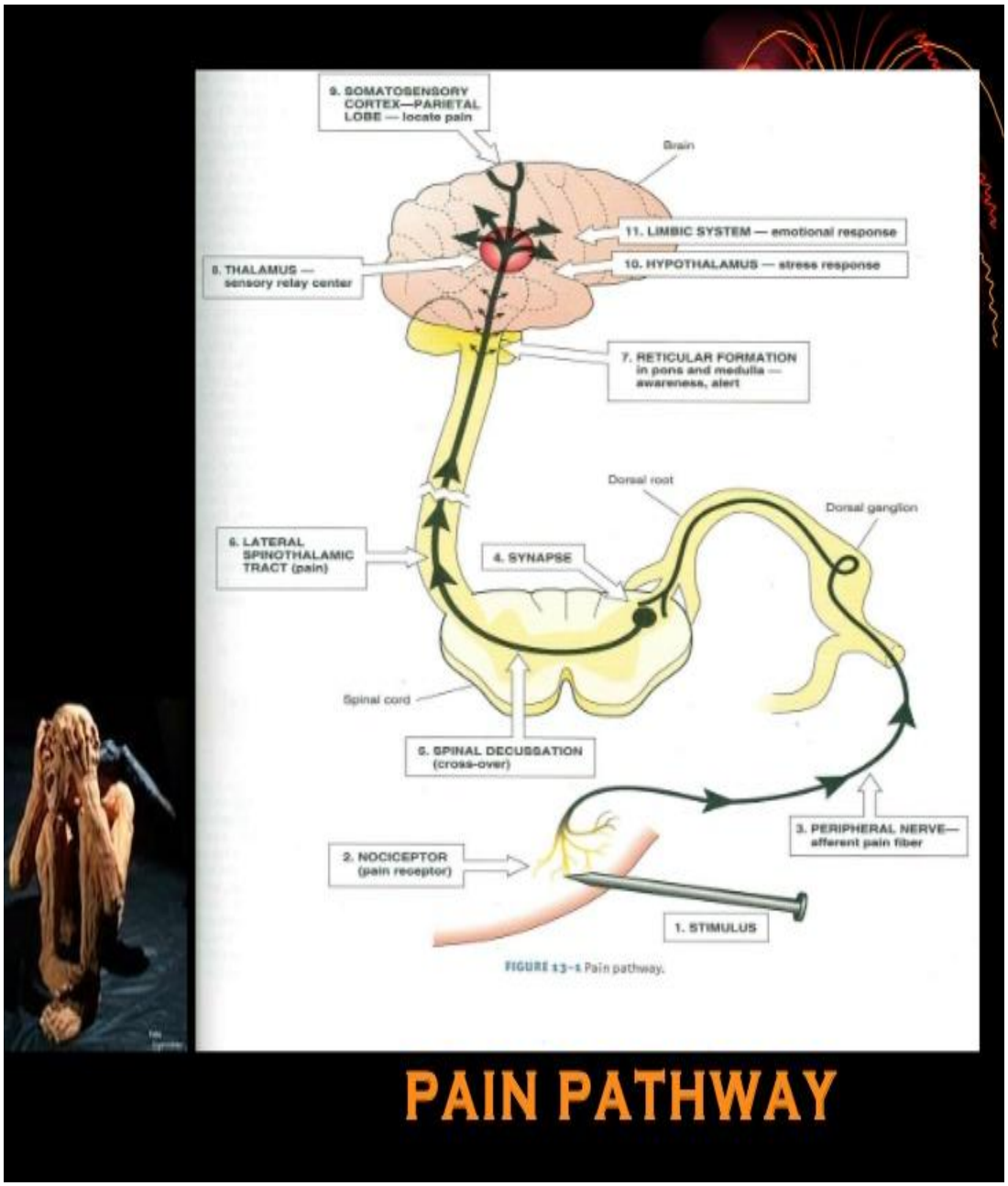



CAUDAL
POST

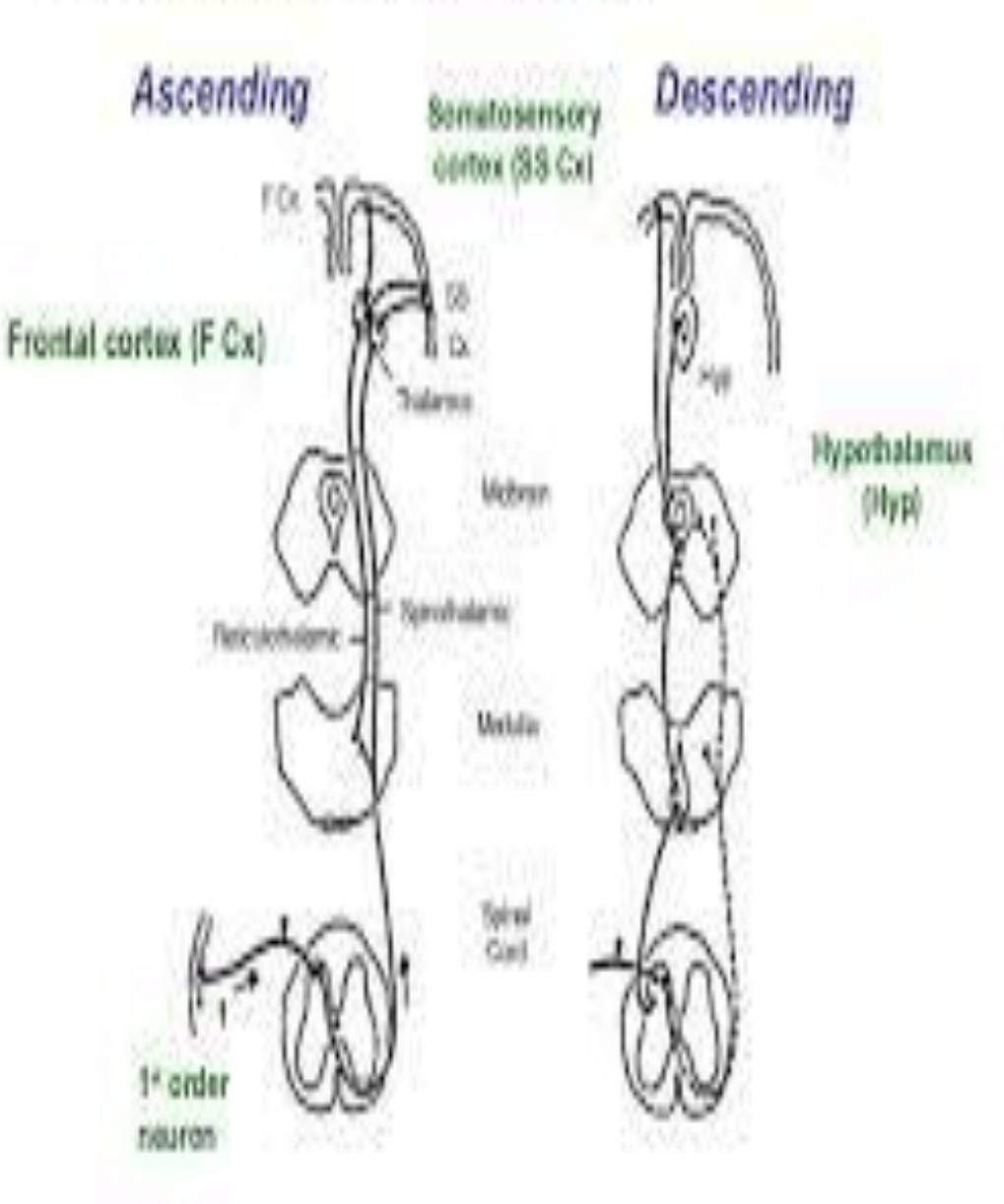
LOW BACK PAIN

PAIN PATHWAY




9. SOMATOSENSORY CORTEX—PARIETAL LOBE — locate pain
Brain
11. LIMBIC SYSTEM — emotional response
8. THALAMUS — sensory relay center
10. HYPOTHALAMUS — stress response
7. RETICULAR FORMATION in pons and medulla — awareness, alert
Dorsal root
Dorsal ganglion
6. LATERAL SPINOTHALAMIC TRACT (pain)
4. SYNAPSE
Spinal cord
5. SPINAL DECUSSATION (cross-over)
3. PERIPHERAL NERVE— afferent pain fiber
2. NOCICEPTOR (pain receptor)
1. STIMULUS
FIGURE 13-1 Pain pathway.
PAIN PATHWAY

How is Pain Modulated?



LOWBACKPAIN - RISK FACTORS

Low back pain, degenerative disc disease, and disc herniation are associated with the following:

- Repetitive heavy lifting
- Static work posture (sitting or standing)
- Frequent twisting and bending
- Vibration (operation of motor vehicle or industrial device)
- The common vibration of construction vehicles and industrial devices ranges in frequency from 3.5 to 8.9 Hz.
- Low-frequency vibration, especially around 5 Hz, in conjunction with a prolonged seated position is associated with spine problems.
- Fatigue of the abdominal and paraspinal muscles has been demonstrated when subjected to 30 minutes of vibration. In the absence of this support, the spine is further susceptible to injury.

POTENTIAL SOURCES OF PAIN [25,29]

Various sources of pain, the spine may be divided Into three compartments: anterior, middle, and posterior.

The anterior compartment consists of the vertebral body and intervertebral disc.

The anterior unit is bound together by cephalocaudal ligaments: anterior longitudinal ligament and posterior longitudinal ligament (PLL)

The anterior longitudinal ligament is anatomically much broader and stronger than the PLL. The PLL is intact throughout the length of the vertebral column until it reaches the lumbar vertebrae.

From L l , it becomes progressively narrower until at L5-S l it is only half of its original width. This anatomic feature contributes to an inherent structural weakness in the lumbar spine . Hence, the lower lumbar spine is the region subjected to the greatest static stress and most spinal movement resulting in the greatest kinetic strain.

The middle (neuraxial) compartment contains all of the structures within the bony and ligamentous boundaries of the spinal canal . This includes the PLL, epiduralspace, meninges, spinal cord, dorsal and ventral nerve roots , root sleeves, dorsal rootganglia, and ligamentum flavum.

The posterior compartment contains the facet joints , laminae, vertebral arches,and structures posterior to the plane of the transverse processes and innervated by the dorsal rami of the spinal nerves. The ligaments are extremely important in stabilizing the vertebral column.

The ligamentum flavum (yellow ligament), which connects the laminae of a adajacent vertebrae, is the thickest and strongest ligament in the lumbar region. It can contribute to spinal stenosis by folding inward during upright posture, extension of the back, and hypertrophy.

The sinovertebral nerve originates lateral to the neuralforamina and enters the spinal canal anterior to the dorsal root ganglion. It is a branch of the somatic ventral nerve root and the sympathetic grey ramus communicans. This specific nerve, also known as the nerve of Luschka, innervates the outer annulus of the disc, PLL, epidural membranes, and dura at the segmental level of origin and adjacent levels . It is important to note that central low back pain, with or without referred pain to the buttocks , may derive from irritation of the outer part of the annulus fibrosis or the PLL.

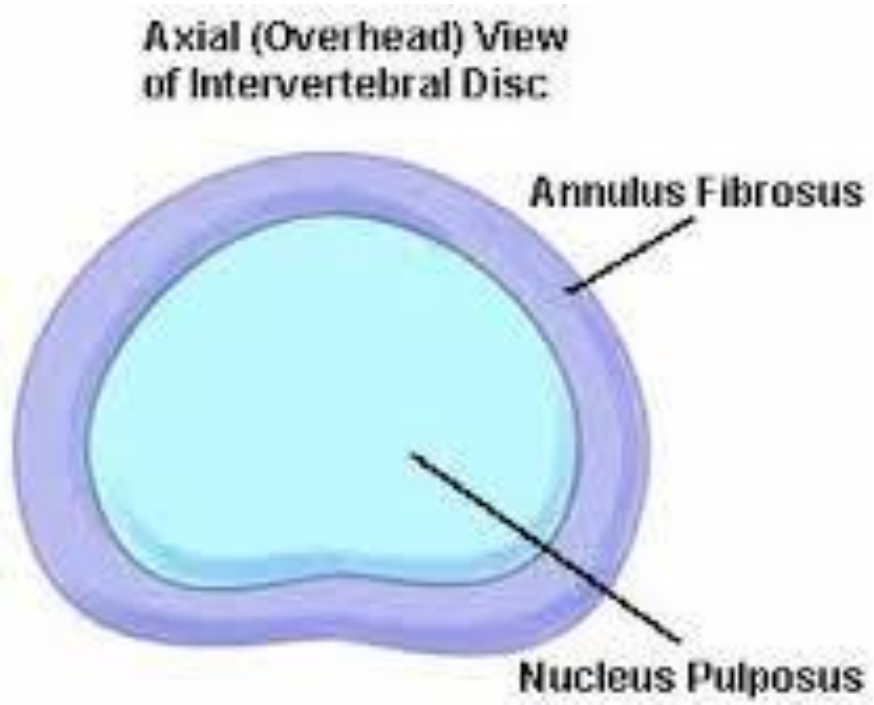
In summary, the potential sources of low back and radicular pain include the bony structure of vertebrae, muscles attached to the spine and hips, fasciae,ligaments, discs, facet joints , meninges, vessels, nerves in the surrounding areas .

The natural wear and tear on the discs and facet joints results in microtrauma and degeneration. This can induce the release of neurohumoral mediators suchas phospholipase A2 , serotonin, H+ , substance P, prostaglandin E2 , and so on, to produce inflammation of the nerve roots or meninges, and sensitize local nociceptors

Furthermore, it has been theorized that material from the nucleus pulposus, sheltered from the immune system by the presence of the annulus fibrosis, might act as a foreign protein and trigger an autoimmune reaction. The recent demonstration of an activated immunocompetent cellular response at the epidural interface of the herniation of the nucleus pulposus supports the concept of the immunogenic capacity of the nucleus pulposus. Tissue injury or inflammation can cause aberrant of nociceptive input into the spinal cord. This may lead to a phenomenon called central sensitization or wind-up of neurons in the dorsal horn of the spinal cord . The release of excitatory amino acids and neuropeptides in the dorsalhorn is thought to be the mechanism underlying the phenomenon of central sensitization.

At the cellular level, there is an increase in spontaneous discharge and an expansion of neural receptive fields of wide-dynamic-range neurons located in Rexedlamina V of the spinal cord. Clinically, this is characterized by sensation of pain when exposed to nonnoxious stimuli (allodynia) , significantly increased response to painful input (hyperalgesia), and increased response to repetitive stimulation (hyperpathia)

ANATOMY OF INTERVERTEBRAL DISC AND MECHANISM OF ACTION[32,33]



Intervertebral disc is a ring like structure composed of centrally located proteoglycan matrix, the nucleus pulposus, which comprises two-thirds of the surface area of the disc. Surrounding the nucleus is a fibrocartilaginous ring composed predominantly of type I collagen, the annulus fibrosus, which makes up the remaining one-third of the surface area of the disc. The annulus fibrosus is stronger anteriorly but often defective posteriorly. As a self-contained fluid system, the disc absorbs shock, permits transient compression, and allows movement. It provides a cushion between the vertebral bodies and allows for greater flexibility. As the disc ages, the number of viable cells in the nucleus pulposus decreases, and the proportion of cells that exhibit necrosis changes from 2% in infancy to 50% in youngadults and 80% in the elderly. The water

content in the young disc is 80% to 90% in the nucleus pulposus. With aging, the discs tend to dehydrate, losing up to 70% of their water content. As the nucleus pulposus further dehydrates, it becomes more fibrous and less compliant. A disc will usually herniate under strain and pressure.When overstressed,it will protrude along in the path of least resistance, usually posterolaterally.

This can cause direct mechanical pressure on the nerve roots resulting in radiculopathy.

In the healthy back, only the outer third of the annulus fibrosus is innervated. In the degenerative or disrupted disc, small unmyelinated nerve fibers grow into the inner third of the annulus fibrosus and even into the nucleus pulposus. Intervertebral disc disruption a condition characterized by a degenerated nucleus pulposus with radial fissures extending into the peripheral annulus fibrosus. Upon rupture of the disc, the release of irritative material near the meninges can induce radiculitis and symptoms of radiculopathy without actual herniated disc material compressing the nerve roots. Under such circumstances, significant disc herniation might not be visualized on magnetic resonance imaging (MRI) or computed tomography (CT) scan. In brief, the proposed mechanisms of radiculopathy include direct pressure on nerve fibers as a result of compression injury and indirect impact through impairment of microcirculation, chemical irritation and inflammation, immune reaction, edema formation secondary to

permeability changes of the intraneural capillaries, and impairment of the nutritional transport to the nerve root.

Compression of the nerve roots is dependent upon the effective space available within the neural foramina, the osseous structures surrounding the neural foramina, and the tethering effects of the intraspinal and extraspinal ligaments. Posterolateral disc herniations can impinge on the lumbar dorsal root, which then initiates electrical discharges for as long as 25 minutes after the mechanical stimulus has been removed. Radiculopathy can be produced by either biochemical or mechanic stimulation of a swollen, stretched,or compressed nerve root. Approximately 3% to 12% of all lumbar disc herniations occur laterally and extend into or beyond the foramina zone; in this setting, the patients will complain of sudden and severe radicular pain, often with dysesthesia. On the other hand, discogenic pain resulting from a central disc bulge or herniation stimulates several lumbar tissues such as the outer layer of the annulus fibrosus or PLL. Clinically, this is manifested as central low back pain without any radicular symptoms.

DIAGNOSTIC STUDIES FOR LOW BACK PAIN[25,37]

There is no need for special studies, because 90% of patients will recover spontaneously within 4 weeks of the onset of pain. Waiting 4 weeks before considering special tests allows these patients to recover spontaneously and avoid unneeded procedures. When pain persists beyond 4 to 6 weeks , plain radiographs of the spine should be

considered. Pertinent findings include the height of the intervertebral spaces and vertebral bodies, and bony changes in the endplates . With oblique views, the facet joint space and any spondylolysis can be revealed. The lateral view can help estimate the severity of spondylolisthesis . A CT scan can show a hemiated disc or fragment in the spinal canal. It can help to identify early epidural hematoma. With contrast, it can help further differentiate tumors, abscesses, and granuloma in the central nervous system. MRI provides excellent anatomic definition of the disc and its hydration status; it can also show the anatomy of the surrounding soft tissues. MRI with intravenous gadolinium is indicated for distinguishing between a recurrent disc herniation and recent postoperative scar tissue.

It is particularly useful when distinguishing intrinsic from extramedullary or epidural spinal cord lesions . When MRI is contraindicated, a myelogram may reveal a filling defect at the level of posterior bulging discs . The myelogram in conjunction with a CT scan enables axial imaging of the spinal cord and subarachnoid space. A bone scan is helpful in the diagnosis of bone or bony fractures that may not be visible by radiography or CT scan, or whenever metastatic disease is suspected.

Discography/discogram/discomanometry (discometry) is a specialized diagnostic test specifically indicated to help diagnose discogenic pain. The presence of pain fiber in the outer third of the

annulus fibrosus may explain back pain in some individuals with an annulus tear or internal disc disruption. The test involves an intradiscal puncture and instillation of contrast into the disc nucleus . It provides direct confirmation there are numerous diagnostic labels used to describe low back pain, for example,lumbosacral sprain, lumbar discogenic syndrome, mechanical low back pain, spinalstenosis, spondylosis, spondylolisthesis, osteoarthritis / facet joint syndrome, myofascialpain syndrome, unstable low back, discitis, and failed back surgery syndrome .each of these labels suggests its own underlying pathology. Acute lumbosacral sprain,by far the most common cause of new-onset low back pain, is often only associated with the presence of postural back pain. It frequently results from reflex muscle spasm secondary to local irritation of structures in the back. When muscle spasm occurs, the normal anatomy may be disturbed and undue force applied to surrounding tissues and structures. In every case, a careful history, physical examination, and the appropriate diagnostic studies will help elucidate the "pain generatorof nuclear morphology and integrity of the vertebral endplate and annulus.

EPIDURAL STEROID INJECTION [1,2,3,4,6]

HISTORY

1901-Jean sicard , fernard cathelin-independently introduced singleshot caudal blocks

1910-arthur lawen, walter stoeckel- advocated caudal blocks for pelvic and obstertric surgeries

1923-gaston labat ,barnet bona r,William meeker -advocated caudal epidural anaesthesia

1942-robert hingston, waldo Edwards , james Southworth-pioneered an approach to continuous caudal analgesia in obstertrics

1952-first corticosteroid injection into epidural space for lumbar radicular pain

EPIDURAL STEROID MEDICATIONS

- Dexamethasone
- Triamcinolone
- Betamethasone
- Methlprednisinolone

MICROSCOPIC SIZE OF EACH STEROIDS

1)Dexamethasone and methylprednisinolone

Particles Smaller than rbc,no aggregation

2)Triamcinolone and betamethasone

Particles vary greatly in size, densely packed and extensive aggregations

DOSAGE

Maximum 3 to 4 injections can be given per year

1) Methyl prednsinolone 3mg/kg maximum 80 to 120mg per day

2) Betamethasone 12 to 18mg per day

3) Triamcinolone 40 to 80mg per day

VOLUME

Caudal –total volume of 20ml can be given(large area in caudal space and large volume due to distance from nerve roots) volume contains mixture of local anaesthetics,normal saline and steroids.

COMPLICATIONS

1) Backache

2) Nausea, vomiting, dizziness

3) Infection

4) Hypothalamo pituitary adrenal axis suppression

5) Nerve root injury and

6) End artery embolism

PHARMACOLOGY OF TRIAMCINOLONE[4,11,18,24]

Triamcinolone is synthetic glucocorticosteroid with antiinflammaory and immune modulating property

↓

As free alcohol (or) in esterified form

↓

Orally, IM, Local injection, by inhalation (or) by topically in management of various disorders

MECHANISM OF ACTION

Upon cell entry

↓

Triamcinolone binds to activate glucocorticoid receptor

↓

Translocation of ligand-receptor complex to nucleus

↓

Induces expression of glucocorticoid responsive genes such as lipocortins

↓

Inhinibit phospholipase A2

↓

Block release of arachidonic acid and from membrane phospholipids

↓

Prevent synthesis of PG/leukotrienes, both mediators of inflammation/ pro inflammatory IL-1, IL-6, cytotoxic lymphocytes inhibits.

Also decreases No. of circulating lymphocytes, induces cell differentiation and stimulates apoptosis through increasing Kappa-B, expression and curtailing activation of NF K-B.

IUPAC NAME

9-fluoro 11,16,17 for hydroxyl 17-(2-hydroxyacetyl) 10,15-dimethyl- 6,7,8,11,12,14,15,16 at acetaydrocyclopenta phenanthsen-3-one.

METABOLISM

Hepatic to 3 less active metabolites

6-beta hydroxytriamcinolone acetonide

21 carboxytriamcinolone actonide

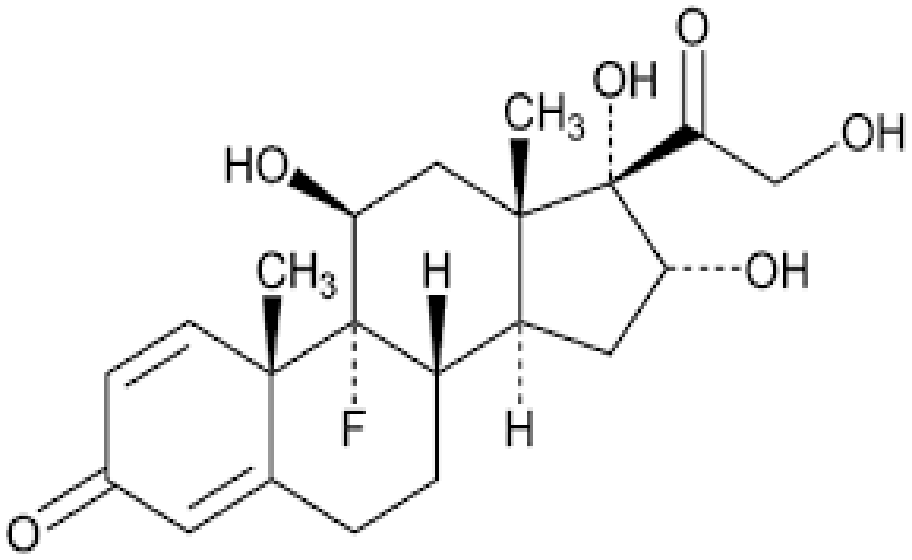
21 carboxy 6-beta triamcindone acetonide

HALF LIFE

IV- 90min (plasma)

Intranasal – 4 hour

STRUCTURE



Fluorinated derivative of prednisolone.

Antinflammatory effect 4mg is equivalent to that of 20mg cortisol.

Has less mineralocorticoid effect than does prednisolone.

Oral and parenteral preparations are available. Hexacetonide preparation injected intraarticularly may provide therapeutic effect for 3 months or longer.

ADVERSE EFFECT

1) Skeletal muscle weakness

2) Anorexia

3) Sedation

TRIAMCINOLONE

Anti inflammatory potency- 5

Na retaining potency – 0

Equivalent dose -4mg

Elimination half time – 3.5 hours

Duration of Action -12 to 36 hrs

Route of administration- Oral, Topical, IV, IM, Epidural

USES

1) Allergic therapy
2) Asthma
3) Lumbar disc disease 25-50mg of triamcinolone
4) Immunosuppression
5) Arthritis

SIDE EFFECTS

1) Suppression of HPA axis
2) Electrolyte and metabolic change
3) Osteoporosis
4) Skeletal muscles myopathy
5) Infection

PHARMACOKINETICS

90% of drug is protein bound to corticosteroid binding globulin.

70% of drug is conjugated in liver

Inactive metabolites.

These watersoluble conjugated metabolites appear in urine and bile. Elimination Half life is 1.5 hours.

PHARMACOLOGY OF BUPIVACAINE[4,11,18,28]

It is amide local anaesthetic

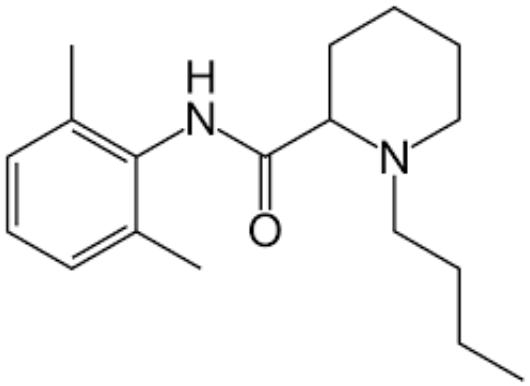
Synthesized by A.F.Ekenstam in 1957.

In clinical use, it is produced in racemic mixture containing equal proportion of S&R enantiomers.

It is supplied for clinical use as a HCl salt

CHEMICAL STRUCTURE

Butyl N (2,6 dimethyl phenyl)-2-piperdine decarboxamide Hcl Monohydrate.



PHYSIOCHEMICAL PROFILE

Molecular weight- 28.8

Plasmaprotein binding- 95%

Lipid solubility- 28

PKa- 8%

MECHANISM OF ACTION

Bupivacaine

↓

Inhibit sodium channel (Voltage gated) i.e. nerve conduction

↓

Prevent large transient increase in permeability of cell membrane to Na ions follows depolarisation

↓

No conduction of pain signal.

PHARMACOKINETIC

Proteinbinding – 95%

Metabolism in liver

Onset within 15 minutes

Biological Half life- 3.5 hrs

Duration of action- 2.8 hrs

Excretion by kidney

PHARMACODYNAMICS

CNS: Circumoral numbness

- Produce restlessness, tremors, vertigo, tinnitus and convulsion due to over dose.

- Followed by drowsiness, unconsciousness, cardiac arrest

CVS

1) Cardiotoxic

2) Cardiac dysarrthymias, AV block, VT, VF occur due to accidental IV injection.

3) Chondrolysis due to continuous infusion into patients.

Allergic reactions

Allergic to amide local anaesthetics i.e. urticaria, pruritis angioneurotic edema occur.

USES

1) In local infiltration
2) Peripheral nerve block
3) Epidural and caudal block
4) Used along with epinephrine to prevent systemic absorption and extend duration of action.
5) Also 0.75% used in retrobulbar block.

CONTRAINDICATIONS

1) Hypersensitivity to amide anaesthetics.
2) Obstetrical paracervical block
3) In Biersblock, because of tornique failure, systemic absorption may occur can finally lead to cardiac arrest.

PREPARATIONS

1)5mg/ml (0.5%) bupivacaine and 80mg dextrose in 4ml ampules for intrathecal injection.

2)0.25%, 0.5% solution in 10ml & 20ml vials.

REVIEW OF LITERATURE

Ackerman WE 3rd Ahmad M[3](2007), epidural steroid injection accomplished by one of 3 methods caudal, interlaminar, transforminal. 90 patients aged 18-60 years with L5S1 disc herniations and radicular pain assigned to one of these groups to have epidural steroid injection every 2 week for maximum 3 injection.They assessed pain relief and disability scoring

Sharma SC, singh R sharma AK, Mitral et al[31](2003) observed that out of 11234 patient reporting to outdoor during June 2001 to 2004, 2594 patient had low back pain. These patient were interviewed and their psychosocial and demographic details compared with 1000 control don't have low back pain. 67% psychosocial issues, 51% blue colour jobs, 26% had to leave their profession, 30% did not enjoy present job. All patient had used NSAIDS at some stage of illness and 64% were adviced exercises for back. They conducted that along with these, sufficient consideration should be given for intensive rehabilitation program.

Singh V, Monchianti L, Sicad[30], (2003) radiologist he was first to introduce dilute solution through sacral hiatus into epidural space in 1901 to treat patients suffering from low back pain followed by evolving of caudal epidural steroid based on promise that, higher local

concentration over the nerve root will be effective than that administered orally or IM. Evidence from all evaluation supports the study that caudal epidural steroid best for low back pain.

Watts RW Silagy CA[36](1999) conducted study and meta analysis on efficacy of epidural corticosteroids in treatment of Sciatica. 11 suitable trials of good quality were identified involving a total of 907 patients.

Use of epidural (caudal or lumbar) in short increased odds ratio of pain relief when compared with placebo, for long term pain relief upto 12 months is 1.87 (95%) efficacy for caudal epidural steroid compared to lumbar is 2.43.There is pooled data from randomized trials that epidural administration of corticosteroid is effective in management of lowback pain

Sitz MY sonmer HM et al(1999) conducted prospective observational study, to evaluate efficacy of caudal epidural injections performed without use of fluoroscopic guidance and to determine value of specific clinical test performed during procedure in predicting successful needle placement in total of 54 patient.

Eartwood, D Williams, Buchan I et al,[15](1998) conducted 1 year preoperative study, using fluoroscopy imaging to identify needle position.They compared the sensitivity and specificity of whoosh test with that of clinical impression alone in correct needle placement in

caudal space. 131 patient was studied, among that correct needle achievement done in 121 patient on first attempt. Whoosh test sensitivity 80% and specificity of whoosh test is superior to clinical judgement in detecting incorrect caudal needle placement.

VG murali Ghaui & Aditya G Kemka Et al conducted prospective study. They determined sample size of 50 patients who responded well to first injection of caudal epidural steroid itself and ODI score was improved

Bush K.Hilier et al(1991)[8] conducted controlled study in management of Sciatica. The study assessed the efficacy of epidural injection of 80mg triamcinolone acetate plus procaine Hcl in saline.

Administered through caudal route. 12 received treatment and 11 placebo. The active group showed significant pain relief and improved quality of life / mobility (P=0.01).

At 1 year improvement was greater in actively treated group.

MATERIAL AND METHODS

60 patients ASA grade I and II of both sexes aged 80 years or less (range 18-80 years) were included in study. After getting ethical committee clearance, study was conducted. Informed written consent was obtained from patients included in study.

STUDY DESIGN

The study was prospective, randomized, double binded controlled study.60 patients with complain of low back pain, radiating to legs not responding to conservative, to whom surgery was not recommended

SELECTION OF CASES

Inclusion Criteria

1) Patients of age 18 years to 80 years.

2) ASA I, II

3) Chronic low back pain unidirectional or bidirectional more than 3 months

4) Refractory to analgesics

5) Who had given valid informed consent.

EXCLUSION CRITERIA

1) Not satisfying inclusion criteria

2) Patient refusal

3) Cases with history of surgery

4) Cases with severe motor weakness, rapidly progressing neurological deficit, cauda equine syndrome, neurogenic claudication.

5) Use of steroids for 3 week (or) less before the study.

6) Allergy to steroids, bleeding diathesis pregnancy

7) Patient with severe cardiovascular, respiratory, renal and hepatic diseases.

MATERIALS REQUIRED

1) 18 gauge epidural needle

2) USG machine and high frequency linear probe

3) 18 gauge venflon

DRUGS

1) 2% lignocaine preservative free

2) Triamcinolone acetate

3) Bupivacaine

4) Emergency drugs

5) Normal saline

EPIDURAL SET

TRIAMCINOLONE ACETONIDE

MONITORS

BP, PR, SPO2, ECG

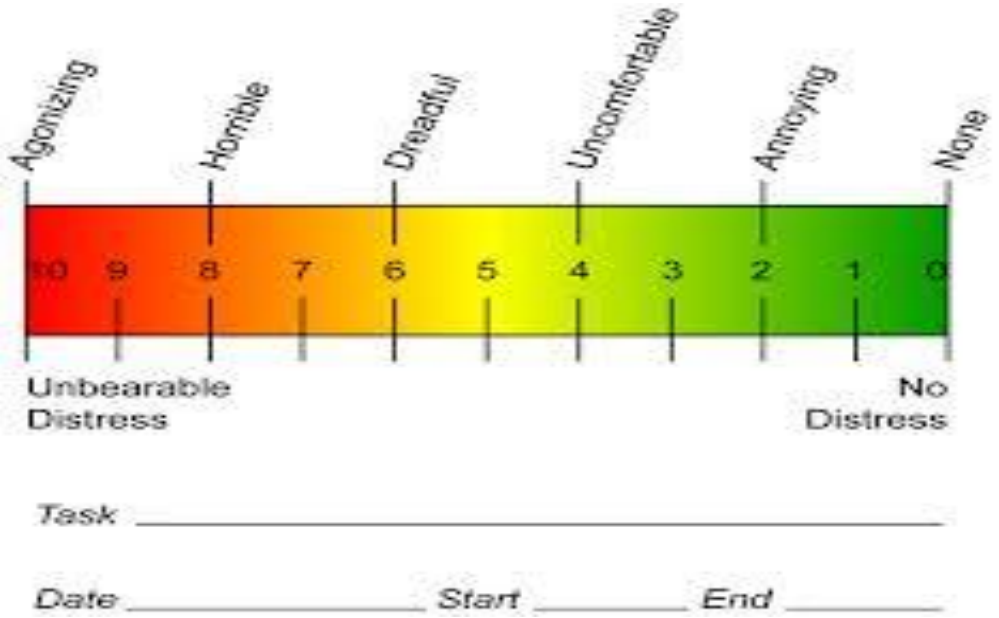
OUTCOMES MEASURED

1) To assess the efficacy of USG guided caudal epidural steroid.

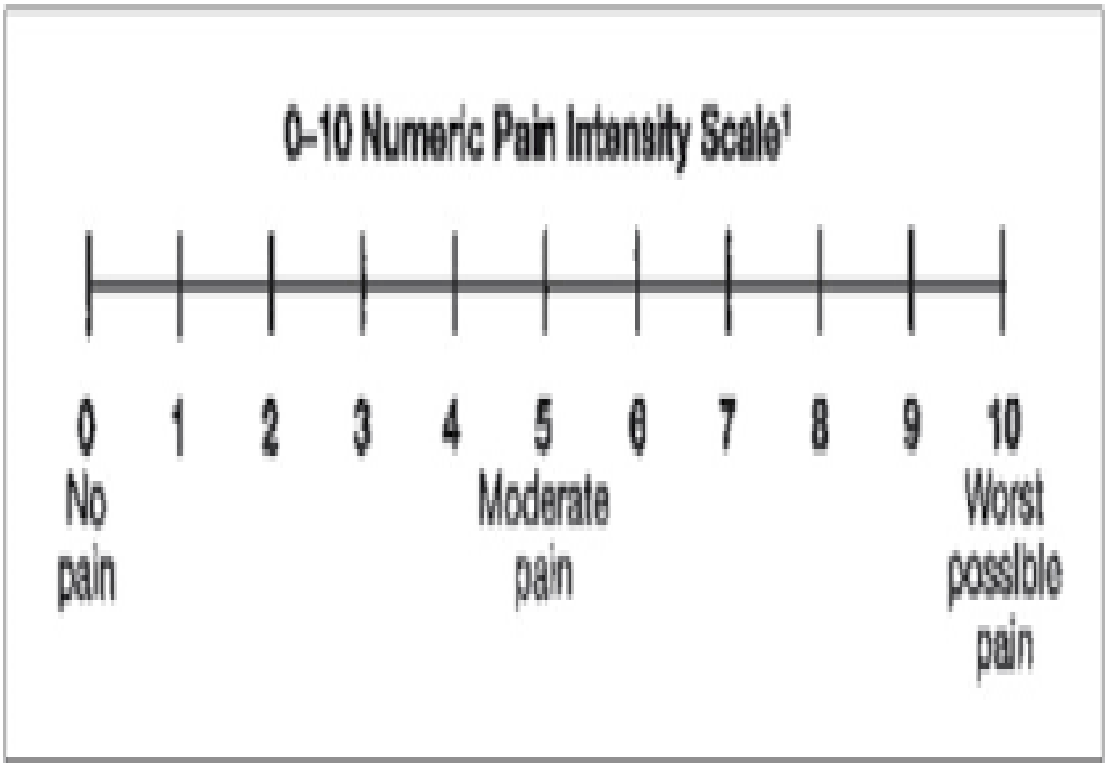
2) To assess the efficacy of analgesic effect by means of VAS, ODI, SLRT.

3) To decrease the complication of lumbar epidural such as trauma to nerve root during needle placement, risk of paraplegia if steroid is injected into radicular artery.

ASSESSMENT OF PAIN USING VISUAL ANALOGUE SCALE




Wong-Baker FACES™ Pain Rating Scale
0
No Hurt
2
Hurts Little Bit
4
Hurts Little More
6
Hurts Even More
8
Hurts Whole Lot
10
Hurts Worst


0–10 Numeric Pain Intensity Scale¹
0 1 2 3 4 5 6 7 8 9 10
No pain
Moderate pain
Worst possible pain

METHODOLOGY

Ethical committee approval

↓

Patient satisfying inclusion criteria

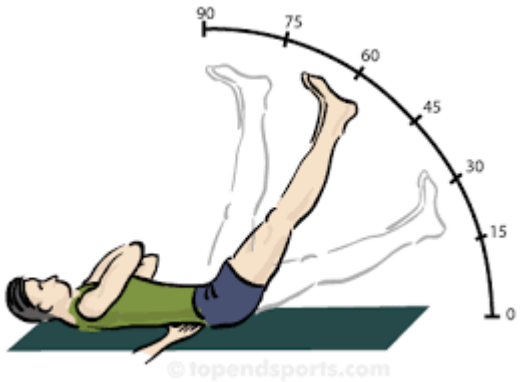
↓

Informed consent obtained

↓

Ramdomization by closed envelope Method

↓



Straight leg raising test, deep tendon reflexes noted. Routine laboratory investigations prothrombin time, bleeding time, clotting time, platelets and random blood sugar done

↓

Peripheral venous accessed

↓

BP/PR/SPO2/ECG Measurement done

↓

Cleaning and draping done under aseptic precautions in prone position (or) lateral position

↓

Under usg guidance, in transverse view sacral cornua, sacrococcygeal ligament and sacral hiatus identified, then probe was tilted longitudinally to identify the structures and caudal epidural space .Under aseptic precaution, local infiltration was done with preservative free 2ml of 2% xylocaine 18 gauge epidural needle was inserted under USG guidance in the caudal space and 80mg Triamcinolone acetate,8cc of 0.125percent bupivacaine was given.

↓

Advice to lie supine after procedure and watch for complications.

Patient observed in post anaesthesia care unit for 24 hours

↓

Data compilation

↓

Statistical Analysis

↓

Conclusion

OBSERVATION RESULTS AND STATISTICS

TABLE 1

Demographics	**N(%) (mean±SD)**
Age (yrs)	42.55± 7.7
GENDER	
Male	40(66.7)
Female	20(33.3)

The mean age of the study participants was 42.55 yrs. 66.7% (n=40)were male and 33.3%(n=20) were female

Figure 1: Mean age

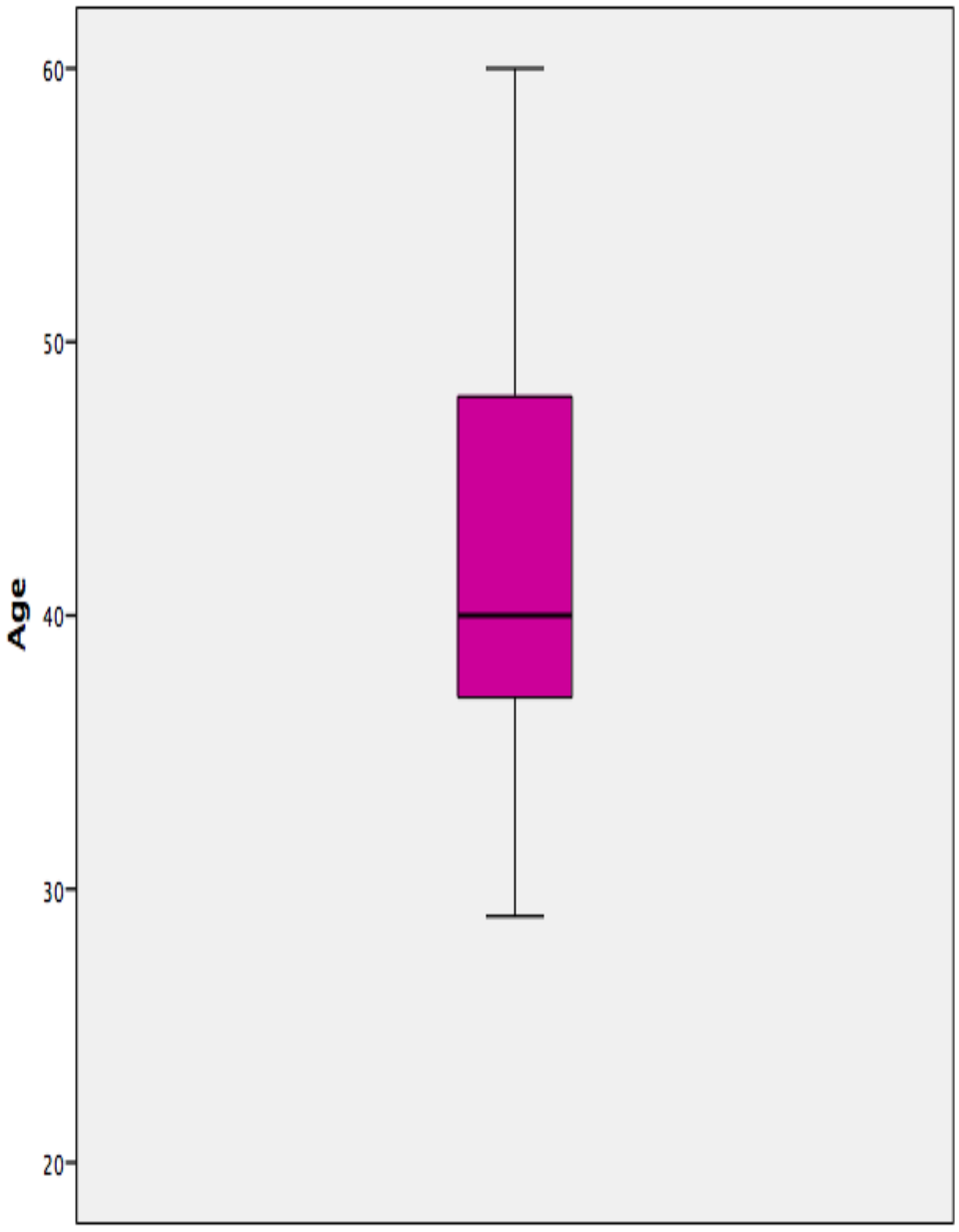


Figure 2: Gender

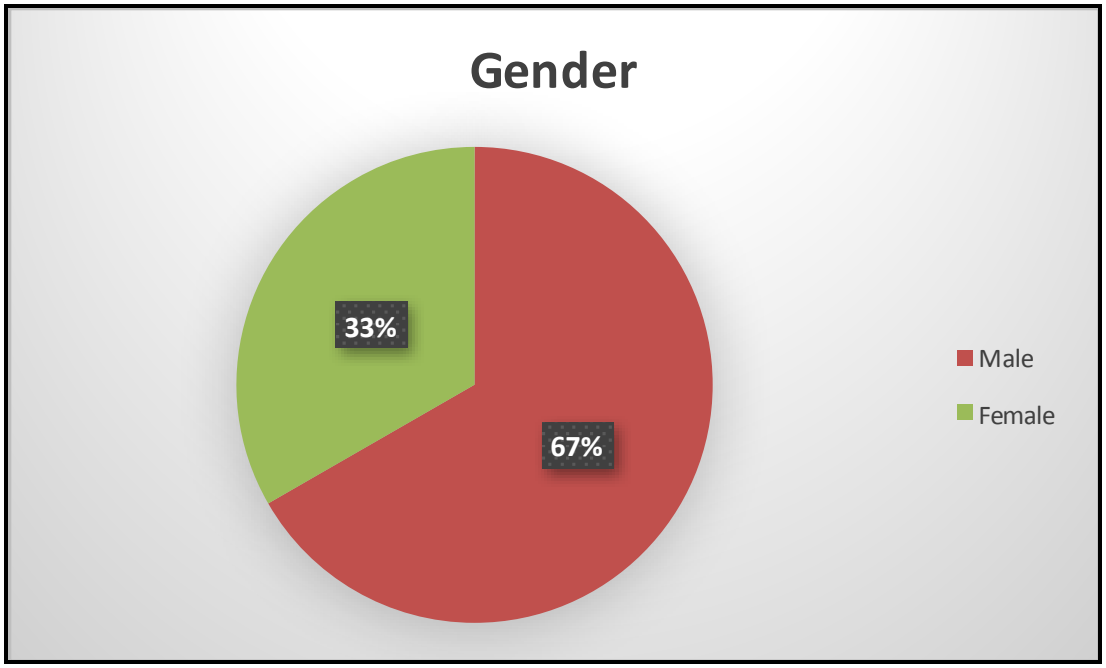


Table 2 VAS scores

VAS Scores	Mean ± S.D
Pre Procedure VAS	7.78±0.59
Post procedure VAS score	2.95±0.57
VAS 30 min	2.8±0.58
VAS 1 hour	2.77±0.56
VAS 1.30 hrs	2.68±0.57
VAS 2-4 hrs	2.57±0.62
VAS 4-6 hrs	2.42±0.59
VAS 6-8 hrs	2.12±0.69
VAS 8-10 hrs	1.82±0.60
VAS 10-24 hrs	1.63±0.55
VAS 2 weeks	1.47±0.50
VAS 4 weeks	1.24±0.43
VAS 6 months	1.1±0.30

The mean VAS Scores before the procedure, after the procedure and during the follow up period are given in Table 2.

Figure 3. VAS Scores

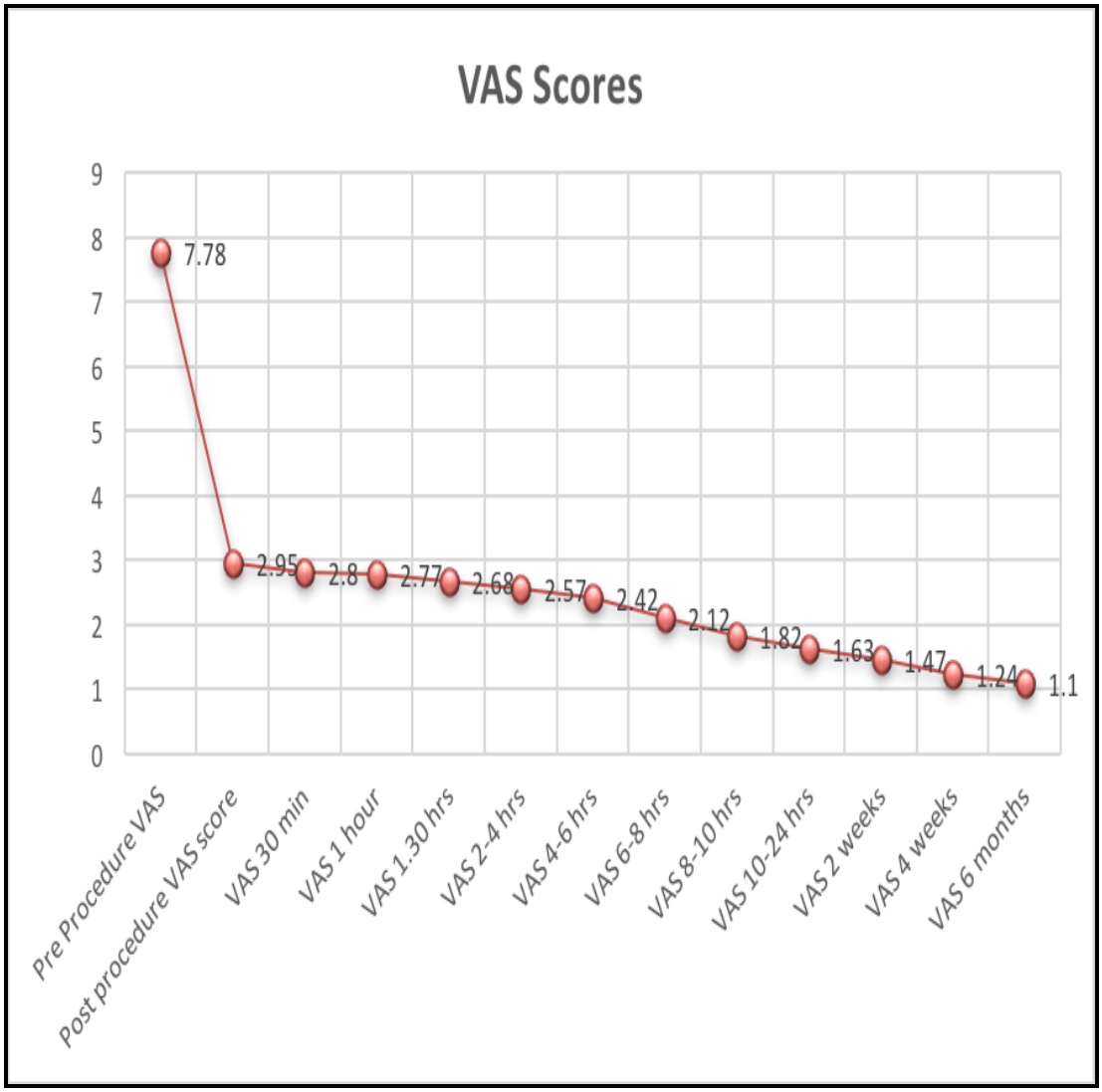


Table 3 Comparing Pre & Post procedure VAS using paired sample test

VAS scores	Mean± S.D	Mean differene	Std. error Differene	95% C.I		
				Lower bound	Upper bound	p value
Pre Procedure VAS score	7.78 ± 0.59	4.83	0.85	4.615	5.052	<0.01*
Post procedure VAS score	2.95 ± 0.57					

*- statistically significant

The mean VAS Score before the procedure is 7.78, and post procedure mean VAS score is 2.95.

There is an average of 4.83 decrease in VAS score after the procedure with 95% Confidence interval ranging from 4.615 – 5.052. The decrease is statistically significant. (p value <0.01)

Table 4 Comparing Pre procedure VAS & VAS at 6 months using paired sample t test

VAS scores	Mean± S.D	Mean difference	Std. error Diff	95% C.I		P value
				Lower bound	Upper bound	
PreProcedure VAS score	7.78 ± 0.59	6.68	0.084	6.515	6.851	<0.01*
VASscore 6months	1.10 ± 0.30					

The mean VAS Score before the procedure is 7.78, and 6 months post procedure mean VAS score is 1.10.

There is an average of 6.68 decrease in VAS score after the procedure with 95% Confidence interval ranging from 6.515 – 6.851. The decrease is statistically significant. (p value <0.01)

Table-5: Heart Rate

Heart rates	Mean ± S.D
Pre procedure Heart rate	80.3±6.71
Heart rate 5 min	78.2±6.38
Heart rate 10 min	76.02±6.67
Heart rate 15 min	74.12±5.08
Heart rate 20 min	73.05±4.50
Heart rate 30 min	71.77±3.73
Heart rate 45 min	71.45±3.51
Heart rate 1 hour	70.77±2.68
Heart rate 1.30 hrs	70.67±3.18
Heart rate 2 hrs	70.52±3.40
Heart rate 2.30 hrs	70.47±2.68
Heart rate 3 hrs	70.42±2.8
Heart rate 6 hrs	69.67± 2.17
Heart rate 12 hrs	69.55 ±2.17
Heart rate 24 hrs	69.55 ±2.11

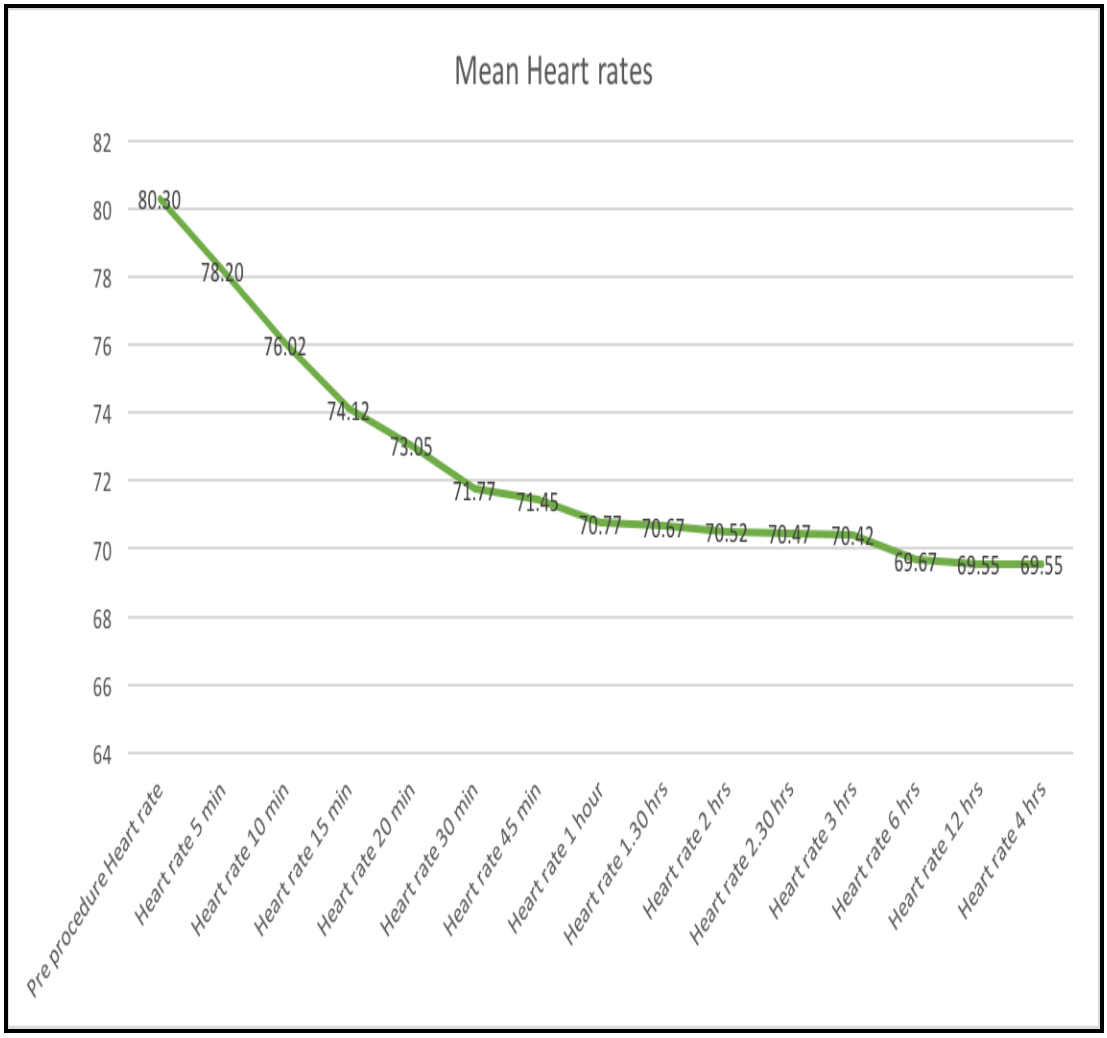

Mean Heart rates
82
80
78
76
74
72
70
68
66
64
80.30
78.20
76.02
74.12
73.05
71.77
71.45
70.77
70.67
70.52
70.47
70.42
69.67
69.55
69.55
Pre procedure Heart rate
Heart rate 5 min
Heart rate 10 min
Heart rate 15 min
Heart rate 20 min
Heart rate 30 min
Heart rate 45 min
Heart rate 1 hour
Heart rate 1.30 hrs
Heart rate 2 hrs
Heart rate 2.30 hrs
Heart rate 3 hrs
Heart rate 6 hrs
Heart rate 12 hrs
Heart rate 4 hrs

Table-6: MAP

MAP	Mean ± S.D
Pre procedure MAP	77.8±9.24
MAP 5 min	76.88±7.98
MAP 10 min	75.81±6.70
MAP 15 min	74.37±5.81
MAP 20 min	74.17±5.09
MAP 30 min	73.75±5.50
MAP 45 min	73.88±4.79
MAP 1 hr	73.17±5.51
MAP 1.30 hrs	73.55±5.19
MAP 2 hrs	72.97±4.89
MAP 2.30 hrs	72.63±4.16
MAP 3 hrs	71.9±4.34
MAP 6 hrs	71.38 ±2.53
MAP 12 hrs	71.55±2.25
MAP 24 hrs	71.65±2.79

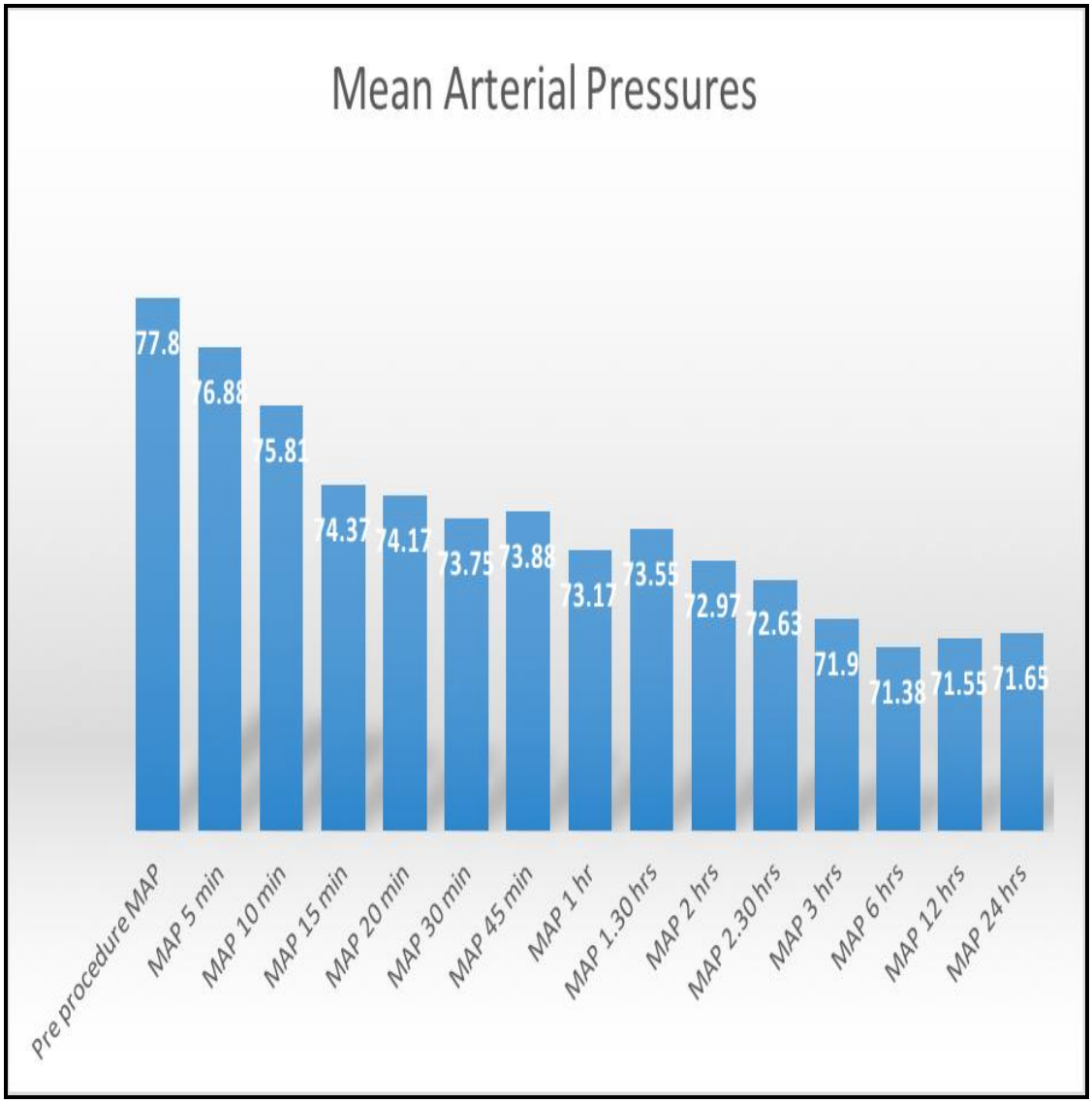

Mean Arterial Pressures
77.8
76.88
75.81
74.37
74.17
73.75
73.88
73.17
73.55
72.97
72.63
71.9
71.38
71.55
71.65
Pre procedure MAP
MAP 5 min
MAP 10 min
MAP 15 min
MAP 20 min
MAP 30 min
MAP 45 min
MAP 1 hr
MAP 1.30 hrs
MAP 2 hrs
MAP 2.30 hrs
MAP 3 hrs
MAP 6 hrs
MAP 12 hrs
MAP 24 hrs

Table 7 SLRT (degrees)

SLRT (Degrees)	Mean ± S.D
Pre procedure SLRT	28.58±7.60
Postprocedure SLRT	71.83±6.24
SLRT 1 week	74±4.94
SLRT 3 months	76±5.27
SLRT 6 months	80.33±6.10

Figure 6 Straight leg raising test

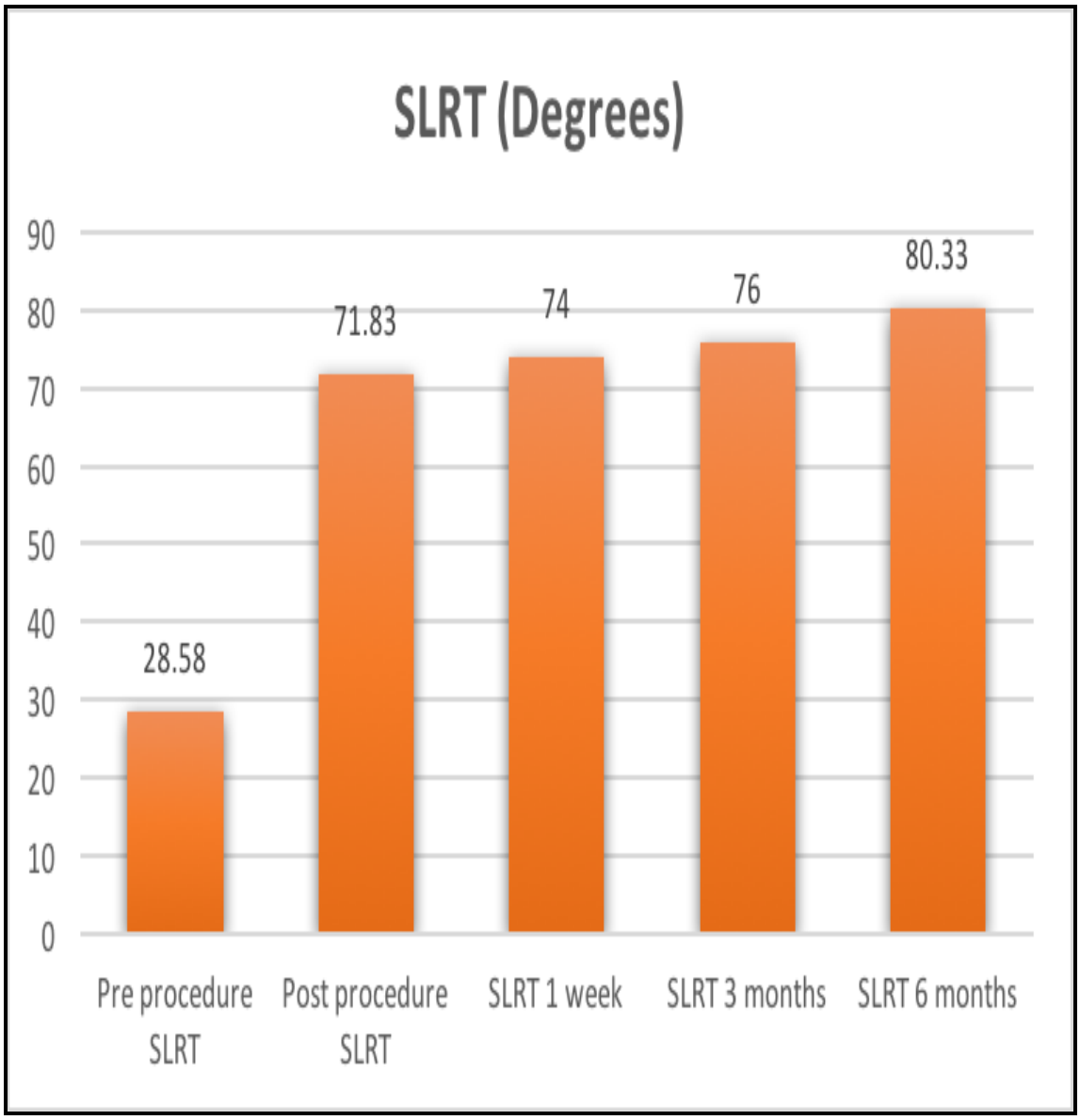


Table-8. SLRT pre & post procedure: Comparison using paired sample t test

SLRT - pre & post procedure	Mean ± S.D	Mean difference	Standard error diff	95% C.I		p value
				Lower bound	Upper bound	
Pre procedure SLRT	28.58±7.6	43.25	1.385	40.478	46.022	<0.01
Post procedure SLRT	71.83±6.24					

The results of Straight leg raising test (in degrees) before the procedure is 28.58, and post procedure SLRT in degrees is 71.83.

There is an average of 43.25 degrees increase in SLRT after the procedure with 95% Confidence interval ranging from 40.478 – 46.022. The increase is statistically significant. (p value <0.01)

Table 9 SLRT pre procedure & 6 months: Comparison using paired sample t test

SLRT (degrees)	**Mean ± S.D**	**Mean difference**	**Standard error diff**	**95% C.I**		**p value**
				Lower bound	**Upper bound**	
Pre procedure SLRT	28.58±7.6	51.75	1.24	49.269	54.231	<0.01
SLRT 6 months	80.33±6.10					

The results of SLRT (in degrees) before the procedure is 28.58, and 6 months post procedure mean SLRT result in degrees is 80.33.

There is an average increase of 51.75 degrees in SLRT 6 months after the procedure with 95% Confidence interval ranging from 49.269 to 54.231. The increase is statistically significant. (p value <0.01)

Table 10. ODI scores

ODI scores	Mean ± S.D
Pre procedure ODI score	70.23±3.49
Post procedure ODI score	15.35±3.95
ODI score 1 week	10.32±3.41
ODI score 3 months	6.43±2.35
ODI score 6 months	3.73±1.60

The disability index scores before the procedure, after the procedure and during the follow up are given in Table 10

Figure 7. ODI scores

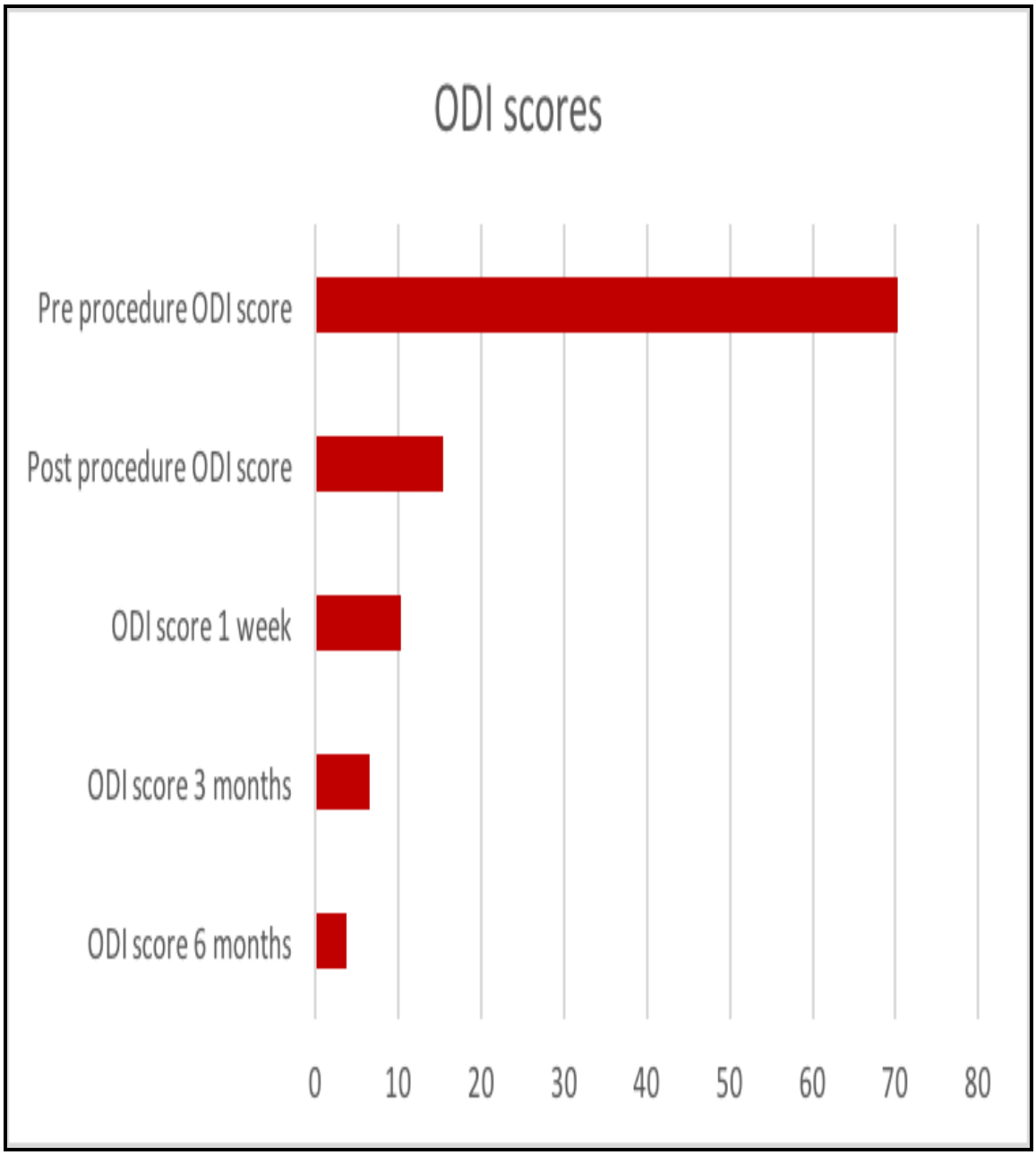


Table 11 ODI scores – pre & post procedure: Comparison using paired t test

ODI scores	Mean ± S.D	Mean difference	Standard error diff	95% C.I		p value
				lower bound	upper bound	
Pre procedure ODI score	70.23±3.49	54.883	0.607	53.669	56.098	<0.01
Post procedure ODI score	15.35±3.95					

The mean ODI score before the procedure is 70.23, and post procedure mean ODI score is 15.35.

The ODI score has decreased by 54.883 on average after the procedure with 95% Confidence interval ranging from 53.669 to 56.098. The decrease in disability score is statistically significant (p value <0.01)

Table 12 ODI scores – pre procedure & 6 months: Comparison using paired t test

ODI scores	Mean ± S.D	Mean difference	Standard error difference	95% C.I		p value
				Lower bound	Upper bound	
Preprocedure ODI score	70.23±3.49	66.5	0.479	65.542	67.458	<0.01
ODI score 6months	3.73±1.60					

The mean ODI score before the procedure is 70.23, and 6 months post procedure mean ODI score is 3.73.

The ODI score has decreased by 66.5 on average 6 months after the procedure with 95% Confidence interval ranging from65.542 to 67.458. The decrease in disability score is statistically significant (p value <0.01)

DISCUSSION

Since high morbidity associated with chronic low back pain and its associated management and etiology remains unclear. Disc degeneration and herniation or by an inflammatory reactions could be responsible for lower back pain. In 1901 sicard introduced the injection of cocaine through caudal epidural steroid are commonly used when dealing with chronic low back pain or radicular pain.

This approach to the epidural space is the earliest known technique for epidural steroid injections or blocks. However it did not gain universal recognition until 1925 when riner popularized its use.

First published report from Evans reported good results of caudal epidural injections continuing saline in patients with low back pain. The results were attributed to physical displacement of nerves and to lysis of neuronal adhesions provided by injected saline.

Since then numerous studies tried to evaluate the efficacy of caudal epidural steroid injection in patients with chronic low back pain and sciatica.

Extensive literature research revealed only a few randomized double blined prospective studies assessing efficacy of this injection technique.

Dansfield etal[13] (2005) evaluated caudal epidural injection and root blocks but concluded that both treatment were effective and had no significant differences.

Singh & Manchikanti[30] (2003) evaluated caudal epidural injection with limited success.

Bushsitiler[8] (1991) evaluated the injections containing steroid and saline and conducted that in short term they were affective but long term potency was variable.

Cuckler et al[12] (1985) did a similar study with variable results but favoured steroid placement.

We assessed the efficacy of caudal epidural steroid injections contain preparation of local anaesthetic and steroid in group of patients with chronic low back pain and sciatica.

Our results showed that 60 patients from the group responded well to first injection itself. Recovery from symptoms was evaluated by VAS score primarily and was steadily observed from first week following injection. The main therapeutic result of injection appeared during 1st week itself and immediate decrease in mean VAS score was noticed

Our results support the existence of both short term and long term relief from symptoms for the group (upto 6 months).And also in our study accidental dural puncture has not occurred.

It is hypothesised that corticosteroids exert their anti-inflammatory actions either by inhibiting the synthesis or release of inflammatory substance, membrane stabilization, inhibition of neural peptide synthesis or action of phospholipase A2 and prolonged suppression of ongoing neuronal discharge are also possible. The administration of any saline solutions may dilute locally accumulated chemical irritants.

In our study the advantage of ultrasound guidance over fluoroscopic guidance is that it is real time sonography, less vascular injury and can be done in bedside procedure. Patient responded well to treatment. Following injection patients are discharged, thereby long periods of hospitalization and bed rest are avoided.

CONCLUSION

Caudal epidural steroid injection offers relatively simple, rapid and easily performed day care procedure that can offer significant pain relief and provides better quality of life. They are easy to perform under ultrasound guidance, less technical skills demanding and with less complications compared with conservative treatment and also who refuse surgery. Caudal epidural steroid injections offer an interesting alternative approach in managing low backpain and sciatica

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ஆராய்ச்சி ஒப்புதல் படிவம்

ஆராய்ச்சியின் தலைப்பு

இடுப்பு வலி மற்றும் இடுப்பு சந்து வாதம் உள்ளவர்களுக்கு காடல் எபிடூரல் வழியாக நுண்ணொளி மூலம் ஸ்டீராய்டு செலுத்தி வலி நிவாரணம் தன்மை ஒப்பிடுதல்.

ஆய்வு நிலையம் : மயக்கவியல் துறை,
சென்னை மருத்துவக் கல்லூரி
சென்னை-3.

பங்கு பெறுபவரின் பெயர் :

பங்கு பெறுபவரின் எண். :

பங்கு பெறுபவர் இதனை (✔) குறிக்கவும்.

மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. என்னுடைய சந்தேகங்களை கேட்கவும், அதற்கான தகுந்த விளக்கங்களை பெறவும் வாயப்பளிக்கப்பட்டது. ☐

நான் இவ்வாய்வில் தன்னிச்சையாக தான் பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த கட்டத்திலும் எந்த சட்ட சிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகி கொள்ளலாம் என்றும் அறிந்து கொண்டேன். ☐

இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்த மேலும் ஆய்வு மேற்கொள்ளும் போதும் இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன். ☐

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்களையும், பரிசோதனை முடிவுகளையும் மற்றும் சிகிச்சை தொடர்பான தகவல்களையும் மருத்துவர் மேற்கொள்ளும் ஆய்வில் பயன்படுத்திக் கொள்ளவும் அதை பிரசுரிக்கவும் என் முழு மனதுடன் சம்மதிக்கின்றேன். ☐

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக் கொள்கிறேன். எனக்கு கொடுக்கப்பட்ட அறிவுரைகளின்படி நடந்து கொள்வதுடன் இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்று உறுதியளிக்கிறேன். ☐

பங்கேற்பவரின் கையொப்பம் ..... இடம் ..... தேதி .....

கட்டை விரல் ரேகை

பங்கேற்பவரின் பெயர் மற்றும் விலாசம் .....

ஆய்வாளரின் கையொப்பம் .....இடம் ..... தேதி .....

ஆய்வாளரின் பெயர் .....

ஆராய்ச்சி தகவல் தாள்

ஆராய்ச்சி தலைப்பு

இடுப்புவலி மற்றும் இடுப்பு சந்துவாதம் உள்ளவர்களுக்கு காடல் எபிடூரல் வழியாக நுண்ணொளி மூலம் ஸ்டீராய்டு செலுத்தி வலி நிவாரணம் தன்மை அடிப்படையில் ஒப்பிடுதல்.

ஆராய்ச்சியாளர் பெயர் : **மருத்துவர் க.கௌதம்**

பங்கேற்பாளர் பெயர் :

ஆராய்ச்சியின் நோக்கம் :

இடுப்புவலி மற்றும் இடுப்பு சந்துவாதம் உள்ளவர்களுக்கு காடல் எபிடூரல வழியாக நுண்ணொளி மூலம் ஸ்டீராய்டு செலுத்தி வலி நிவாரணம் தன்மை அடிப்படையில் ஒப்பிடுதல்.

1. வலி நிவாரண நேரம்
2. சிகிச்சையின் போதும் அதன் பின்பும் நாடித்துடிப்பு, இரத்த அழுத்தம்
3. பக்க விளைவுகள்
4. சிகிச்சைக்கு பிறகு விசுவல் அனலாக் அளவுகோலின் படிவலியின் அளவு

ஆய்வு முறை :

ஆய்வில் பங்குபெறும் நோயாளிகள்

நுண்ணொளி மூலம் காடல் எபிடூரல் மூலம் ஸ்டீராய்டு செலுத்தி சரி செய்யபடுபவர்கள்

ஆராய்ச்சி தகவல் தாள்

ஆராய்ச்சி தலைப்பு

இடுப்புவலி மற்றும் இடுப்பு சந்துவாதம் உள்ளவர்களுக்கு காடல் எபிடூரல் வழியாக நுண்ணொளி மூலம் ஸ்டீராய்டு செலுத்தி வலி நிவாரணம் தன்மை அடிப்படையில் ஒப்பிடுதல்.

ஆராய்ச்சியாளர் பெயர் : **மருத்துவர் க.கௌதம்**

பங்கேற்பாளர் பெயர் :

ஆராய்ச்சியின் நோக்கம் :

இடுப்புவலி மற்றும் இடுப்பு சந்துவாதம் உள்ளவர்களுக்கு காடல் எபிடூரல வழியாக நுண்ணொளி மூலம் ஸ்டீராய்டு செலுத்தி வலி நிவாரணம் தன்மை அடிப்படையில் ஒப்பிடுதல்.

1. வலி நிவாரண நேரம்
2. சிகிச்சையின் போதும் அதன் பின்பும் நாடித்துடிப்பு, இரத்த அழுத்தம்
3. பக்க விளைவுகள்
4. சிகிச்சைக்கு பிறகு விசுவல் அனலாக் அளவுகோலின் படிவலியின் அளவு

ஆய்வு முறை :

ஆய்வில் பங்குபெறும் நோயாளிகள்

நுண்ணொளி மூலம் காடல் எபிடூரல் மூலம் ஸ்டீராய்டு செலுத்தி சரி செய்யபடுபவர்கள்

நன்மைகள் :

1. சிகிச்சையின் போது நாடித்துடிப்பு மற்றும் இரத்த அழுத்தம் சீராக செயல்பட உதவுகின்றன.
2. இதர வலி நிவாரணிகளின் தேவை வெகுவாக குறைக்கப்படுகின்றன.
3. சிகிச்சைக்குப் பின்னர் வலி நிவாரணத்தின் தன்மை நீட்டிக்கப்படுகின்றது.

பக்கவிளைவுகள் :

ஊசி போடும்போது அசௌகரியம் ஏற்படலாம். மரத்துப்போகும் ஊசியின் மூலம் இது தவிர்க்கப்படும். குறைந்த இரத்த அழுத்தம், குறைந்த நாடித்துடிப்பு ஏற்படலாம். அதற்கு மாற்று மருந்துகள் உடனடியாக கொடுக்கப்படும்.

இந்த முறையான ஆய்வு ஏற்கனவே பல இடங்களில் நடத்தப்பட்டுள்ளது. மேலும் இதன் பாதுகாப்பு உறுதிசெய்யப்பட்டுள்ளது. நீங்கள் இந்த ஆய்வில் பங்குகொள்ள விரும்பவில்லை என்றால் எப்போதும் உபயோகிக்கப்படும் மருந்தே கொடுக்கப்படும். உங்கள் பாதுகாப்பே எங்களின் முக்கிய நோக்கம்.

இந்த ஆய்வு சம்பந்தமான எல்லா புள்ளி விவரங்கள் மற்றும் நோயாளிகளின் விவரங்கள் ரகசியமாக வைக்கப்படும். இந்த ஆய்வு சம்பந்தப்பட்ட எல்லா பரிசோதனைகள், மருந்துகள் மற்றும் மருத்துவ சேவைகள் அனைத்தும் நோயாளிகளுக்கு இலவசமாக வழங்கப்படும்.

ஆய்வாளரின் பெயர் பங்குபெறுபவரின் பெயர்

ஆய்வாளரின் கையொப்பம் பங்குபெறுபவரின் கையொப்பம்

INFORMATION TO PARTICIPENTS

Investigator : **Dr. GOWTHAM.G**

Name of the Participant:

Title. ""USG guided caudal epidural steroid in management of chronic low back pain and sciatica".
(A Prospective, randomized, double blinded , placebo controlled study)
You are invited to take part in this research study. We have got approval from the IEC. You are asked to participate because you satisfy the eligibility criteria. We want to study the safety **"USG guided caudal epidural steroid in management of chronic low back pain and sciatica".**

What is the Purpose of the Research:

For chronic low back pain & Sciatica caudal epidural steroid using ultrasound.

1. To evaluate the duration of analgesic efficacy after procedure .
2. To assess haemodynamics during and after procedure.
3. Post procedure visual analogue scale pain score.
4. Complication rate.

The Study Design:

This study includes 60 patients,

Caudal epidural steroid 20ml NS,2ml of 2% Xylocaine preservative free & 2ml of 40mg Triamcinolone acetate.

Benefits

USG guided caudal epidural safe & efficient treatment for pt not responding to Rx & whom surgery not recommended ,avoid possible complication due to lumber epidural steroids such as injury to nerve root, radicular artery injury.

Discomforts and risks

HYPOTENSION

Intravascular local anaesthetic injection

Damage to neuro vascular structure

This intervention has been shown to be well tolerated as shown by previous studies. And if you do not want to participate you will have alternative of setting the standard treatment and your safety is our prime concern.

Time :
Date :
Place :

Signature / Thumb Impression of Patient
Patient Name:

Signature of the Investigator : _____

Name of the Investigator : _____

PROFORMA

DATE:

NAME:

AGE: SEX: IPNO:

DIAGNOSIS:

PROCEDURE: AIRWAY:

HB:

BT:

CT: POSITIONING:

USG GUIDED CAUDAL EPIDURAL STEROID:

DRUGS:

MEASUERS OF STUDY OUTCOME AND COMPLICATION OF PROCEDURE:

HAEMODYNAMICS

Events	Time	MAP	Heart rate	Spo2
Baseline				
During procedure				
After procedure				

Time in mins	0 min	5 min	10 min	15 min	20 min	30 min	45 min	60 min	90 min	120 min	150 min	180 min	6 hrs	12 hrs	24 hrs
Heart rate															
MAP															
spo2															

POSTPROCEDURE

Time	0 min	30 min	1 hr	1.5 hrs	2-4 hrs	4 to 6hrs	6-8 hrs	8 to 10hrs	10-24 hrs	2wk	4wk	6mon
VAS Score												

Duration	1 week	3 mon	6 mon
SLRT in degrees			
ODI score			

PATIENT CONSENT FORM

Study title ""USG guided caudal epidural steroid in management of chronic low back pain and sciatica".

(A Prospective, randomized, double blinded , placebo controlled study)

Study center: **INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE,**

RAJIV GANDHI GOVT. GENERAL HOSPITAL,

MADRAS MEDICAL COLLEGE,

CHENNAI-0 3.

Participant name: Age: Sex: I.P.No:

I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I have been explained about the pitfall in the procedure. I have been explained about the safety, advantage and disadvantage of the technique.

I understand that my participation in the study is voluntary and that I am free to withdraw at anytime without giving any reason.

I understand that investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from the study.

Time:

Date: Signature / thumb impression of patient

Place: Patient name:

Signature of the investigator:

Name of the investigator:

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To
Dr.Gowtham.G.
II Year Post Graduate in M.D.(Anaesthesiology)
Madras Medical College & RGGGH
Chennai 600 003

Dear Dr.Gowtham.G,

The Institutional Ethics Committee has considered your request and approved your study titled **"USG GUIDED CAUDAL EPIDURAL STEROID IN MANAGEMENT OF CHRONIC LOW BACK PAIN AND SCIATICA " - NO.27032016.**

The following members of Ethics Committee were present in the meeting hold on **01.03.2016** conducted at Madras Medical College, Chennai 3

1.Dr.C.Rajendran, MD.,	:Chairperson
2.Dr.R.Vimala,MD.,Dean,MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	: Member Secretary
4.Prof.B.Vasanthi,MD.,Inst.of Pharmacology,MMC,Ch-3	: Member
5.Prof.P.Raghumani,MS, Dept.of Surgery,RGGGH,Ch-3	: Member
6.Dr.Baby Vasumathi, Director, Inst. of O&G,Ch-8	: Member
7.Prof.M.Saraswathi,MD.,Director, Inst.of Path,MMC,Ch-3	: Member
8.Prof.Srinivasagalu,Director,Inst.of Int.Med.,MMC,Ch-3	: Member
9.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
10.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
11.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

S.No.	Name	Age	Sex	IP No	Pre Procedure VAS SCORE	Pre procedure SLRT IN DEGRE	preprocedure ODI score	Heart Rate											
								0 Min	5 Min	10 Min	15 Min	20 Min	30 Min	45 Min	60 Min	90 Min	120 Min	150 Min	180 Min
1	GOVINDAN	40	M	71/16	7	20	65	90	92	96	90	86	86	84	83	84	86	82	80
2	KRISHNAN	40	M	77/16	7	30	70	84	82	84	80	76	76	76	74	78	75	72	76
3	DEVI	34	M	79/16	8	30	80	78	88	88	87	76	76	74	72	76	72	70	72
4	MUNIYAMMAL	31	F	75/16	8	30	65	88	72	72	74	70	70	74	70	74	74	74	73
5	CHANDRABABU	35	M	81/16	8	40	73	98	94	96	88	86	74	74	76	74	72	70	70
6	AMUL	30	F	83/16	8	30	74	89	86	76	74	72	72	70	76	74	72	72	70
7	KOUSALYA	35	F	85/16	8	20	65	88	78	76	74	72	70	68	70	72	66	74	72
8	LAKSHMI	29	F	102/168	8	40	68	84	82	80	78	76	74	76	74	72	70	70	72
9	NIJA MOHAMMAD	41	M	108/168	8	30	70	90	90	88	86	84	80	81	70	70	73	74	75
10	INDRA	41	F		8	30	72	90	88	85	84	82	80	78	74	73	72	70	68
11	ANGAMUTHU	48	M	90/16	8	40	68	88	87	85	76	78	70	75	74	70	68	76	70
12	KANAGASABAI	60	M	91/16	8	30	70	88	84	82	78	76	74	75	70	65	66	67	67
13	SHEEBA	40	F	92/16	7	30	72	86	78	79	76	84	82	78	70	70	68	68	69
14	RANGANATHAN	50	M	93/16	7	30	65	88	78	76	74	72	70	68	70	70	68	70	69
15	NAGARATHINAM	50	M	82/16	7	30	68	90	86	84	75	75	74	73	70	70	65	70	70
16	SANTHANAYAGI	60	F	84/16	8	30	70	78	75	76	74	70	70	72	68	68	70	72	74
17	ELUMALAI	48	M	72/16	8	40	72	75	74	72	74	67	69	70	70	76	70	71	71
18	RASU	48	M	73/16	7	20	68	75	74	70	68	69	69	70	72	74	70	68	62
19	BHASKAR	43	M	76/16	9	30	70	74	72	68	74	79	72	68	69	70	74	70	70
20	THIYAGARAJAN	35	M	74/16	8	30	74	70	70	68	68	74	72	70	69	68	72	70	70
21	MANIMARAN	35	M	78/16	8	20	66	76	75	73	70	69	70	71	68	70	74	74	70
22	PRABU	38	M	75/16	9	30	70	70	72	69	68	64	70	70	68	70	69	72	72
23	MANACKAM	50	M	83/16	7	30	68	70	68	68	70	70	68	66	64	69	70	70	71
24	SAGAYAM	46	M	84/16	8	30	70	70	76	74	73	72	70	72	70	70	73	72	72
25	NATARAJAN	50	M	61/16	8	40	70	70	74	68	66	69	64	70	70	70	68	66	68
26	LALITHA	35	F	62/16	8	40	74	74	70	68	70	71	73	68	70	69	66	70	72
27	KARUPANATHAN	38	M	64/16	8	30	76	78	74	75	70	72	72	68	69	70	74	70	75
28	MUTHUMARI	47	M	65/16	7	30	72	70	68	69	69	70	68	70	70	68	65	69	68
29	PANDIAN	60	M	66/16	8	30	78	70	69	68	70	71	72	68	70	65	68	64	64
30	MATHIKARAN	56	M	67/16	8	30	68	78	76	76	74	72	70	71	71	70	72	70	72

31	UDAYAKUMAR	40	M	63/16	7	40		79	80	72	72	74	72	70	70	70	72	70	68
32	KANAGASABAI RAM	46	M	69/16	8	30	65	80	72	70	70	72	68	70	71	70	68	68	70
33	RAVI	48	M	43214	8	30	68	82	84	78	74	70	74	68	70	70	75	74	72
34	MURUGAN	46	M	78643	8	40	70	76	78	76	74	70	70	68	72	68	70	72	70
35	SUNDARAPANDI	48	M	74329	8	30	78	78	74	76	70	72	74	72	70	70	72	70	68
36	SOMASEKAR	52	M	72314	9	20	68	76	70	68	70	72	68	70	72	68	70	68	69
37	RAMACHANDRAN	44	M	67543	7	40	70	80	81	82	76	74	74	72	70	70	74	68	69
38	SRINIVASAN	48	M	76500	8	30	74	86	85	83	76	74	70	70	72	68	70	68	68
39	SUDAKAR	38	M	68705	8	30	66	86	84	74	72	72	71	70	68	70	70	71	71
40	VASANTHA	40	F	72312	7	40	70	84	80	78	76	72	70	68	70	70	69	70	71
41	RAMYA	35	F	76586	7	30	72	90	85	84	82	80	76	74	70	74	72	70	69
42	BAKTHAVACHALAM	38	M	74326	7	10	69	88	86	84	72	70	70	74	74	73	72	70	70
43	HARI	40	M	70324	7	20	70	78	74	72	70	70	68	68	71	70	72	68	70
44	LAKSHPATHY	60	M	71234	8	10	72	74	70	71	68	70	72	70	70	70	70	73	70
45	RAMESH	36	M	76231	7	30	74	80	82	76	74	70	68	70	68	65	69	68	70
46	MOHANAPRIYA	38	F	79001	9	20	70	86	82	78	76	74	72	70	68	70	70	71	70
47	RANI	36	F	67854	8	20	73	86	84	80	78	76	74	70	71	68	66	70	72
48	SUMATHI	35	F	66543	8	30	68	76	74	70	74	70	71	72	72	74	73	68	69
49	MEYAMAI	42	F	70043	9	30	69	78	76	74	70	70	68	72	70	70	72	70	70
50	NAGAPOOSHANAM	45	F	74321	8	15	64	76	74	70	71	70	71	68	69	68	69	70	70
51	JEYANTHI	38	F	79034	7	30	70	70	70	68	71	72	72	69	70	70	65	70	68
52	THENMOZHI	32	F	78543	8	20	70	76	72	74	71	68	69	70	71	65	68	68	66
53	MOHAN	40	M	76091	8	30	72	78	76	74	70	70	71	68	70	70	73	72	70
54	SUDHA	38	F	65432	7	10	76	76	74	72	74	74	68	68	70	70	72	71	74
55	THARUN	38	M	67890	8	30	70	80	81	69	72	70	69	70	71	72	68	69	68
56	ANNADURAI	40	M	63421	7	20	65	86	84	78	76	72	74	70	70	70	65	68	70
57	RAMAN	54	M	60087	8	20	70	78	76	74	70	72	70	71	68	70	72	68	69
58	VELLAGIRI	45	M	70085	8	30	74	80	78	76	75	70	72	77	76	74	69	74	75
59	MEERA	35	F	74378	8	30	72	80	78	76	77	77	75	74	72	74	68	72	74
60	THENI	45	F	79034	8	30	66	78	76	75	74	72	68	76	69	70	74	72	71

			MAP																				
6hrs	12hrs	24hrs	0 Min	5 Min	10 Min	15 Min	20 Min	30 Min	45 Min	60 Min	90 Min	120 Min	150 Min	180 Min	6hour	12hour	24hour	0 Min	5 Min	10 Min	15 Min	20 Min	30 Min
80	76	80	80	84	85	76	80	85	78	90	76	78	76	82	80	80	82	99	99	99	99	99	99
76	75	74	76	78	75	76	78	76	80	82	85	76	74	73	74	75	80	99	99	99	99	99	99
74	75	74	86	88	75	70	70	74	72	70	74	70	72	70	70	70	70	99	99	99	99	99	99
72	72	72	72	70	72	68	75	64	74	65	78	72	76	75	72	72	72	99	99	99	99	99	99
70	70	72	86	88	70	70	74	76	72	70	85	86	78	74	70	72	70	99	99	99	99	99	99
70	70	70	98	95	90	84	82	84	80	78	76	74	72	74	74	74	70	99	99	99	99	99	99
74	74	70	90	88	88	78	76	75	74	72	70	72	68	70	70	70	72	99	99	99	99	99	99
70	70	68	88	85	84	84	76	74	74	72	70	68	70	72	72	72	72	99	99	99	99	99	99
70	70	70	93	87	73	75	72	68	68	70	72	70	70	72	70	70	73	99	99	99	99	99	99
68	68	70	90	86	84	78	75	74	76	72	71	70	68	69	74	73	70	99	99	99	99	99	99
70	72	72	86	78	75	74	73	72	70	67	68	68	66	70	70	70	72	99	99	99	99	99	99
70	68	70	90	98	78	76	75	74	73	70	65	67	68	66	70	70	72	99	99	99	99	99	99
68	68	68	86	76	74	72	70	70	72	70	67	75	73	72	70	70	73	99	99	99	99	99	99
68	68	70	84	75	74	72	70	72	74	72	70	70	74	70	71	74	70	99	99	99	99	99	99
70	70	70	76	70	74	72	71	70	68	66	70	72	72	68	70	70	72	99	99	99	99	99	99
68	68	69	70	72	70	74	72	68	69	70	71	70	70	68	70	70	70	99	99	99	99	99	99
70	72	70	70	72	68	69	68	70	72	70	74	68	69	70	70	69	68	99	99	99	99	99	99
64	64	64	75	74	72	70	68	66	71	70	78	76	74	72	70	72	72	99	99	99	99	99	99
70	70	68	70	68	70	74	72	68	70	71	69	73	72	70	72	74	72	99	99	99	99	99	99
68	69	70	72	68	70	72	74	78	76	74	71	70	68	70	70	74	72	99	99	99	99	99	99
70	70	70	74	72	70	71	70	72	76	68	70	68	70	70	70	72	70	99	99	99	99	99	99
70	71	71	68	66	68	68	80	78	79	81	82	80	84	70	70	72	6875	74	73	99	99	99	99
68	72	70	72	70		72	70	75	78	74	76	78	77	76	76	76	74	99	99	99	99	99	99
68	69	70	68	78	70	72	72	72	70	71	68	70	71	70	74	74	72	99	99	99	99	99	99
70	68	68	70	72	74	70	72	68	70	68	69	71	72	69	74	72	72	99	99	99	99	99	99
70	68	69	69	71	74	76	70	71	73	76	68	70	71	70	72	72	70	99	99	99	99	99	99
68	64	68	76	74	68	69	70	71	70	69	70	68	70	70	72	72	70	99	99	99	99	99	99
70	70	68	70	70	72	68	69	70	70	68	69	70	71	68	70	74	70	99	99	99	99	99	99
68	69	70	90	70	80	88	80	81	80	68	70	74	72	72	72	70	68	99	99	99	99	99	99
70	70	68	87	89	88	86	84	82	78	70	74	75	72	70	72	72	72	99	99	99	99	99	99

70	70	68	93	90	88	86	80	84	78	76	74	72	74	70	70	70	72	99	99	99	99	99	99
68	69	70	86	88	85	78	76	75	74	80	81	78	76	80	70	72	72	99	99	99	99	99	99
70	68	70	88	86	84	70	74	76	78	75	73	72	70	76	72	72	70	99	99	99	99	99	99
68	69	70	86	83	84	80	82	78	76	75	74	69	70	70	72	70	70	99	99	99	99	99	99
70	70	70	78	74	72	70	74	72	68	70	76	73	68	66	65	70	72	70	99	99	99	99	99
69	68	67	68	69	70	71	76	74	72	70	71	69	68	70	74	70	70	99	99	99	99	99	99
68	66	68	70	73	69	71	70	69	68	70	71	72	69	70	72	72	72	72	99	99	99	99	99
68	70	70	71	75	73	72	69	68	85	83	82	74	70	70	68	70	70	99	99	99	99	99	99
70	70	69	70	71	69	68	70	73	86	84	82	80	81	80	72	72	72	99	99	99	99	99	99
70	68	68	78	79	74	69	71	75	68	70	74	70	68	70	70	72	72	99	99	99	99	99	99
69	68	70	68	69	70	71	69	73	72	78	76	74	70	69	72	70	68	99	99	99	99	99	99
70	71	71	68	80	82	78	78	74	76	70	69	80	76	70	70	70	72	99	99	99	99	99	99
68	68	69	70	76	74	75	71	70	69	72	72	70	74	70	70	72	70	99	99	99	99	99	99
70	71	69	98	89	88	86	78	75	74	76	74	70	70	72	72	70	72	99	99	99	99	99	99
68	68	70	87	89	86	87	80	86	76	75	74	70	72	71	72	72	70	99	99	99	99	99	99
68	68	68	87	85	86	84	70	73	72	75	74	71	72	70	70	68	68	99	99	99	99	99	99
70	68	68	86	78	75	74	76	70	71	68	65	68	70	70	70	70	70	99	99	99	99	99	99
70	70	68	70	71	72	68	69	70	74	73	72	71	70	70	71	72	72	99	99	99	99	99	99
70	71	71	68	69	70	71	72	72	74	70	74	74	70	68	70	74	70	99	99	99	99	99	99
68	68	70	68	69	70	71	71	72	70	74	74	73	70	68	68	69	70	99	99	99	99	99	99
70	70	68	64	71	70	70	71	76	72	68	69	70	74	71	70	70	70	99	99	99	99	99	99
70	68	70	68	70	72	76	80	81	82	80	82	84	84	80	70	72	72	99	99	99	99	99	99
70	70	68	68	70	71	70	89	80	84	86	80	90	83	84	70	70	71	99	99	99	99	99	99
70	70	68	68	68	69	70	73	72	70	74	71	73	79	80	72	72	72	99	99	99	99	99	99
70	68	68	82	80	86	85	90	92	84	84	88	86	82	88	82	80	84	99	99	99	99	99	99
70	70	68	79	70	85	84	82	78	80	84	79	76	75	70	74	72	73	99	99	99	99	99	99
68	70	70	86	70	78	76	72	68	69	70	80	70	75	76	72	72	73	99	99	99	99	99	99
70	70	68	70	74	76	69	68	67	66	69	68	70	74	72	72	70	70	99	99	99	99	99	99
70	70	68	70	71	70	68	69	66	70	68	68	70	70	69	70	71	71	99	99	99	99	99	99
68	68	70	73	74	70	70	72	68	68	69	70	70	74	72	70	70	72	99	99	99	99	99	99

SPO2									Post procedure	SLRT In Degrees			postprocedure	ODI SCORE	
45 Min	60 Min	90 Min	120 Min	150 Min	180 Min	6hr	12hr	24hr	SLRT in degree	1week	3month	6month	odi score	1week	3month
99	99	99	99	99	99	99	99	99	70	70	70	80	22	20	10
99	99	99	99	99	99	99	99	99	80	80	80	80	21	15	10
99	99	99	99	99	99	99	99	99	70	70	70	80	24	16	9
99	99	99	99	99	99	99	99	99	80	80	80	90	20	14	6
99	99	99	99	99	99	99	99	99	60	70	70	70	20	10	8
99	99	99	99	99	99	99	99	99	80	70	80	70	18	8	5
99	99	99	99	99	99	99	99	99	80	80	80	90	16	7	6
99	99	99	99	99	99	99	99	99	70	70	80	80	18	10	8
99	99	99	99	99	99	99	99	99	70	70	70	80	22	10	5
99	99	99	99	99	99	99	99	99	70	70	80	80	15	10	5
99	99	99	99	99	99	99	99	99	60	70	80	80	10	10	5
99	99	99	99	99	99	99	99	99	70	70	70	70	18	14	5
99	99	99	99	99	99	99	99	99	80	80	80	80	10	10	5
99	99	99	99	99	99	99	99	99	70	70	70	80	10	8	5
99	99	99	99	99	99	99	99	99	80	80	80	80	15	10	8
99	99	99	99	99	99	99	99	99	70	70	80	80	10	10	5
99	99	99	99	99	99	99	99	99	60	70	70	80	20	10	10
99	99	99	99	99	99	99	99	99	80	80	80	80	15	10	10
99	99	99	99	99	99	99	99	99	70	70	70	80	18	18	10
99	99	99	99	99	99	99	99	99	70	70	70	80	20	15	5
99	99	99	99	99	99	99	99	99	70	70	70	70	18	10	6
99	99	99	99	99	99	99	99	99	80	80	80	90	10	10	5
99	99	99	99	99	99	99	99	99	80	80	80	90	19	15	10
99	99	99	99	99	99	99	99	99	70	70	80	80	20	18	12
99	99	99	99	99	99	99	99	99	70	80	80	80	20	10	10
99	99	99	99	99	99	99	99	99	80	80	80	90	18	15	10
99	99	99	99	99	99	99	99	99	70	70	70	80	18	10	10
99	99	99	99	99	99	99	99	99	70	70	70	70	16	14	10
99	99	99	99	99	99	99	99	99	80	80	80	80	18	16	10
99	99	99	99	99	99	99	99	99	60	70	70	80	10	5	5

99	99	99	99	99	99	99	99	99	70	70	70	80	10	10	5
99	99	99	99	99	99	99	99	99	70	80	80	80	15	10	8
99	99	99	99	99	99	99	99	99	70	70	80	80	15	10	5
99	99	99	99	99	99	99	99	99	70	80	80	90	10	8	5
99	99	99	99	99	99	99	99	99	80	80	80	90	15	10	6
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	Post Procedure Visual Analogue Score (VAS)												
6month	0 Min	30 Min	1 Hrs	1.5 Hrs	2-4 Hrs	4-6 Hrs	6-8 Hrs	8-10 Hrs	10-24 Hrs	2 Week	4 Week	6 Months	1 Year
5	3	2	2	1	1	1	1	1	1	1	1	1	
4	4	3	2	2	2	2	1	1	1	1	1	1	
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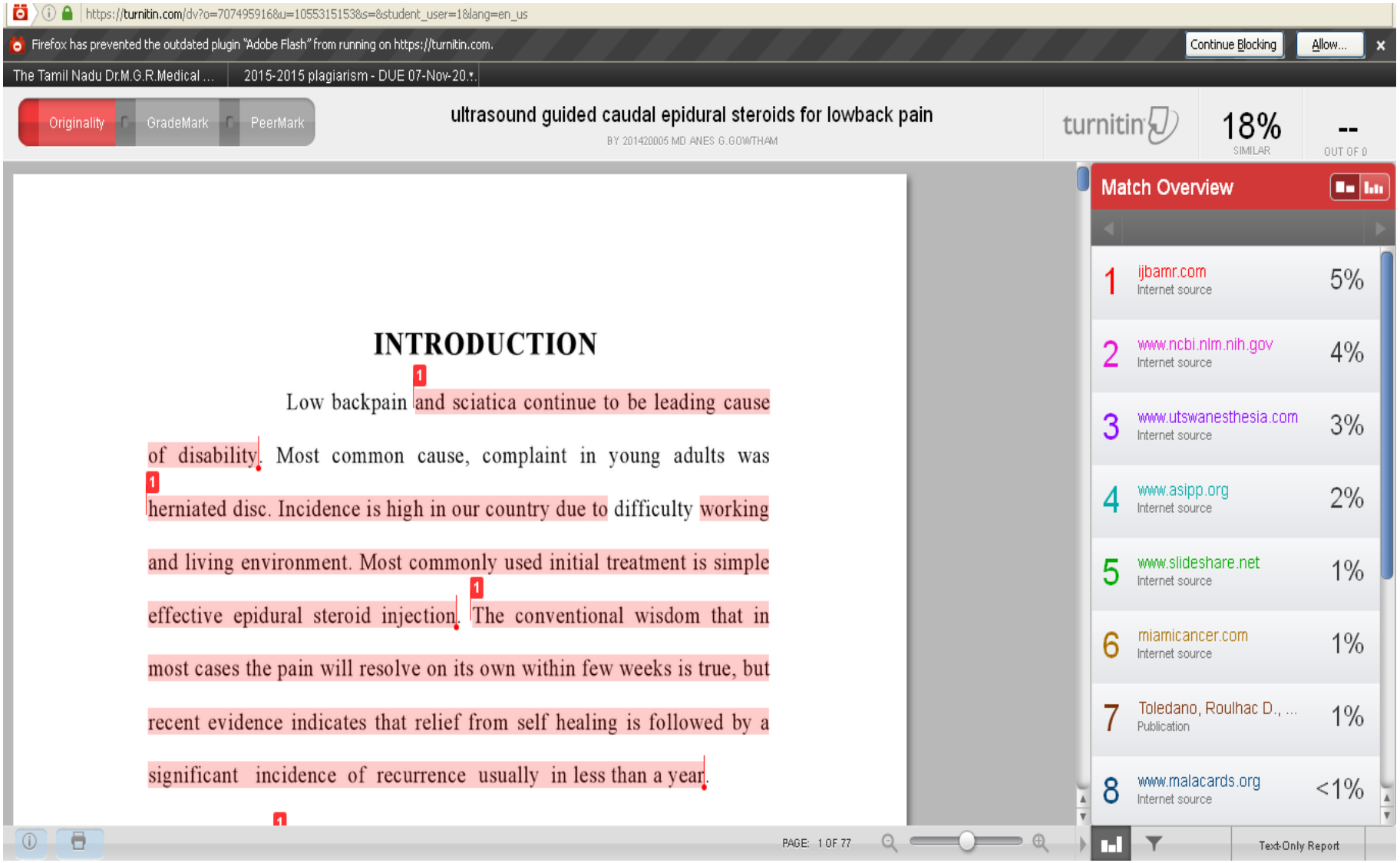
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INTRODUCTION
Low backpain and sciatica continue to be leading cause of disability. Most common cause, complaint in young adults was herniated disc. Incidence is high in our country due to difficulty working and living environment. Most commonly used initial treatment is simple effective epidural steroid injection. The conventional wisdom that in most cases the pain will resolve on its own within few weeks is true, but recent evidence indicates that relief from self healing is followed by a significant incidence of recurrence usually in less than a year.
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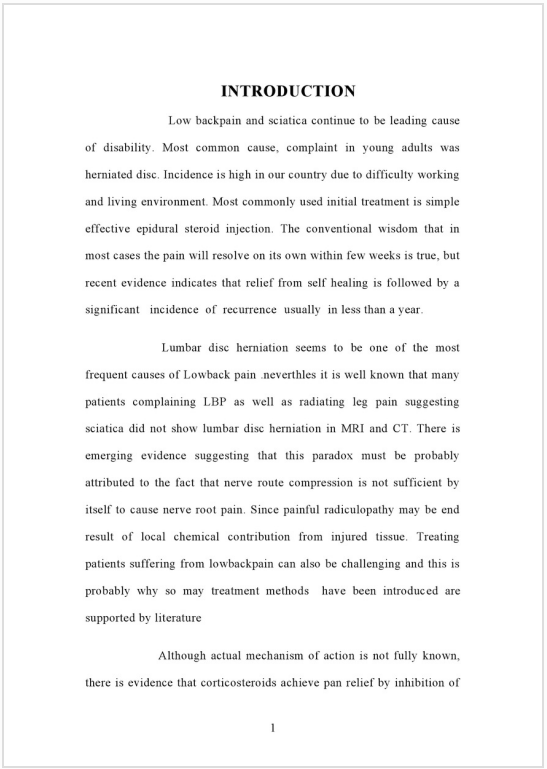

INTRODUCTION

Low backpain and sciatica continue to be leading cause of disability. Most common cause, complaint in young adults was herniated disc. Incidence is high in our country due to difficulty working and living environment. Most commonly used initial treatment is simple effective epidural steroid injection. The conventional wisdom that in most cases the pain will resolve on its own within few weeks is true, but recent evidence indicates that relief from self healing is followed by a significant incidence of recurrence usually in less than a year.

Lumbar disc herniation seems to be one of the most frequent causes of Lowback pain .neverthles it is well known that many patients complaining LBP as well as radiating leg pain suggesting sciatica did not show lumbar disc herniation in MRI and CT. There is emerging evidence suggesting that this paradox must be probably attributed to the fact that nerve route compression is not sufficient by itself to cause nerve root pain. Since painful radiculopathy may be end result of local chemical contribution from injured tissue. Treating patients suffering from lowbackpain can also be challenging and this is probably why so may treatment methods have been introduced are supported by literature

Although actual mechanism of action is not fully known, there is evidence that corticosteroids achieve pan relief by inhibition of

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